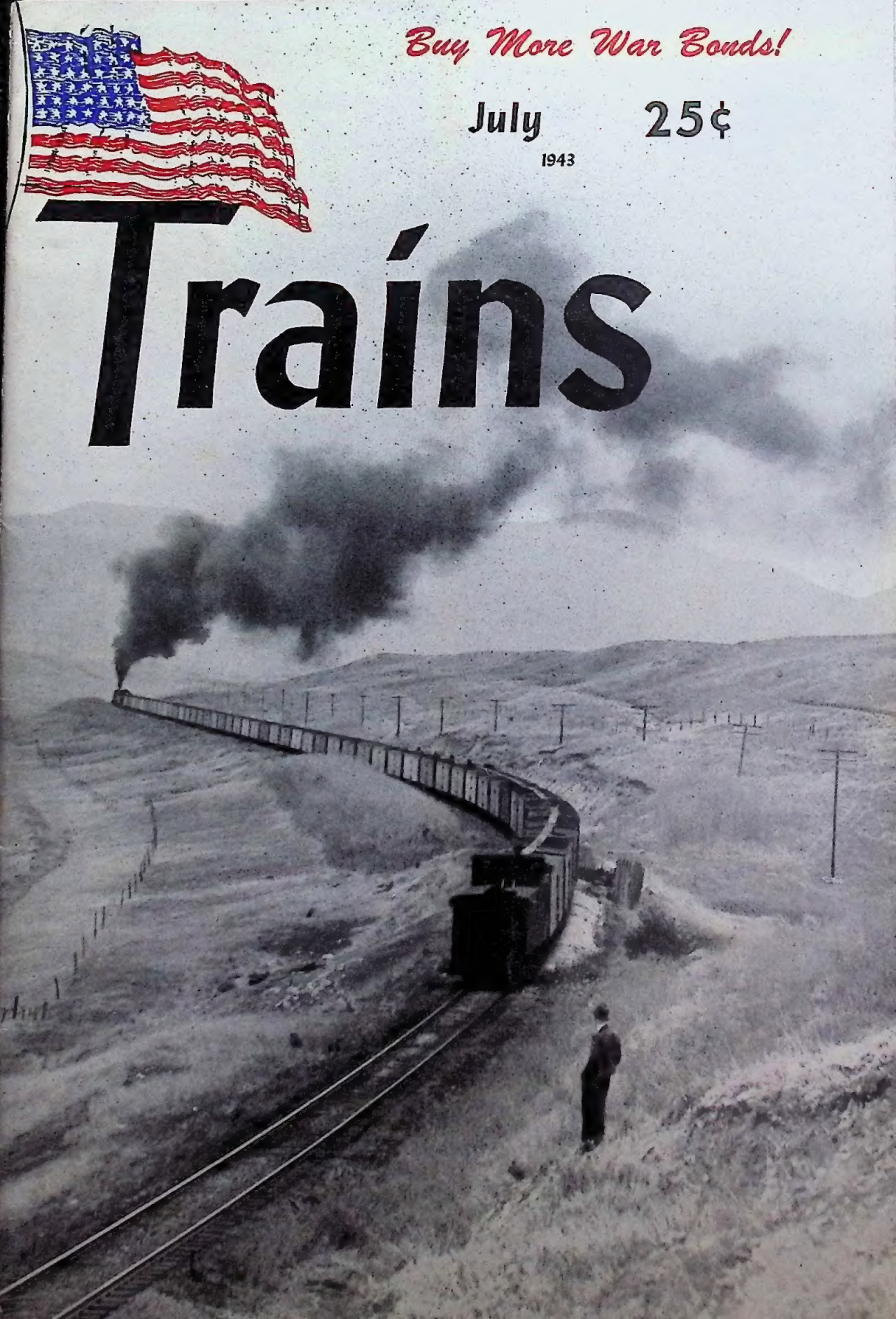
Buy More War Bonds!
July 25¢
1943
Trains

W. F. Postles, 2223 N. E. 43rd Ave., Portland, Ore.

Deadheading to a pickup.

This Southern Pacific locomotive and caboose are on their way to pick up a log train. The photo was taken at Milwaukie, Ore., seven miles south of Portland on the 120-mile branch line to Tillamook. On the 58 miles from Portland to Timber and the 22 miles from Wheeler to Tillamook the SP gives freight service only, but from Timber to Wheeler, 40 miles, a daily mixed train is run. Industries of the region include logging, salmon packing, creameries, and cheese plants. Wheeler and Timber are both small (population about 200). Tillamook, population 2500, is the mercantile center of the area.

On the covers.

On the front cover Preston George of Denver, Colo., pictures a railfan watching a D&RGW freight train head westward from Denver toward Moffat Tunnel. The rear cover photo is of a GTW Mikado aside a water column at Muskegon, Mich.

July, 1943

Trains

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THE railroads are not only the most economical overland means of transport, but they have the greatest potential for decreasing cost as traffic increases. The railroad industry is almost uniquely dependent upon volume of traffic, for the operating expenses as well as financial expenses are to a considerable extent fixed and so these expenses are lowest per unit of traffic when the most traffic is being hauled.

This has been forcibly brought home in the past year, when the railroads moved 50 per cent more ton-miles than in peak year 1929, and yet not only reduced their per-ton-mile capital cost 30 per cent, but more notably also reduced their operating cost per unit by 30 per cent.

We will always have railroad transportation, at least as long we or our children or our children's children will be around. The railroads are the backbone of our transportation system. Last year they produced 64 per cent of all inland ton-miles; trucks, airplanes, lake boats, pipe lines, and waterways combined produced only the other 36 per cent.

Not only do the railroads produce the majority of the transportation, but they are the true common carriers. They take *anything*, to any part of the continent. The American railroad system is truly a transportation miracle, although to us it has become commonplace. A car loaded at any freight station in the United States, Canada, or Mexico (with only the few narrow-gauge exceptions) can be dispatched for any other station with no more thought than to send it to the next town. Chalk that up not only to standardization of gauge, but to standardization of repair parts and to the marvelous system of car accounting, rates, and rate divisions.

Yes, the railroads are the one transportation system which does a complete job—any product from coal to jewelry and anywhere from Ayutla, Guatemala, to Gaspe, New Brunswick, out in the Gulf of St. Lawrence. And if they are handed enough traffic, without too many tidbits given here and there to other means of transport which could not do the complete task, the railroads can make sizeable reductions below the already low unit cost of moving freight.

The same thing goes for passenger business. Last year, for the first time since 1929, the railroads made an operating profit on passengers. For every dollar received in passenger revenue, the operating expenses were 74.3 cents. This was because of quantity. A heavily patronized mainline passenger train can move passengers profitably at far less than present rates, but it must make up for the money lost by dozens of lightly used branchline trains, maintained only as standby facilities for people who seldom use the train. Let the railroads continue to concentrate on mainline passenger business and gradually abandon loss-leader branches and the passenger business will be really profitable, not the headache it has so often been.

NEARLY a million barrels of oil a day are moving into the East by rail. The average daily figure for the week ended May 15 was 980,652 barrels, and it is still going up. Not bad for a standby facility which handled only 11,250 barrels a day before the war!

Recent improvements in quantity of oil handled are due largely to a new system of handling both loaded and empty tank cars in train lots on schedules and over 42 definite established routes. The carriers are now authorized to disregard instructions as to routing given by shippers or car owners. Not only do the loads move faster, but empty car movement is speeded up even more. An empty tanker always was just an empty to a yard man, but now it is part of an O. D. T. symbol train, and is neither considered nor treated like an empty. Tank cars now average 200 miles per day per car.

A. C. Kalmbach.

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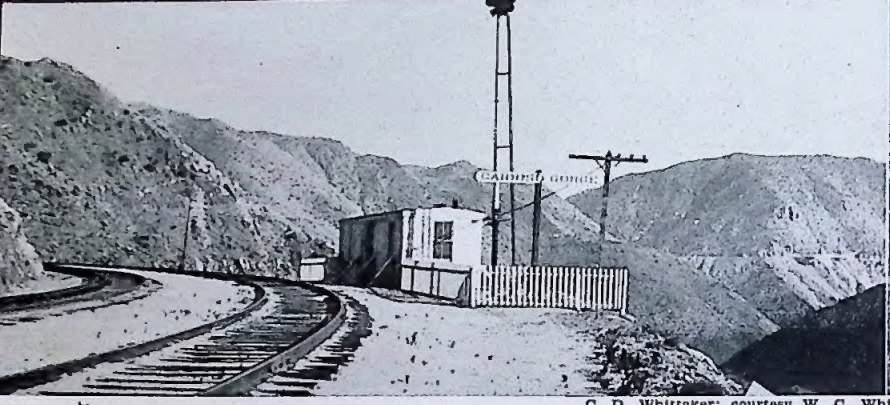


C. D. Whittaker; courtesy W. C. Whittaker, 1217 Hester Ave., San Jose, Calif.

Carriso Gorge

★ A little-known scenic spot of the Southwest.

EAST of San Diego in the Laguna Mountains is one of those scenic spots reached only by railroad, a steep-walled gorge useful to the rails as a natural grade but avoided by the highways because of construction difficulties. The San Diego & Arizona Eastern's 148-mile main line threads Carriso Gorge on its way to the Imperial Valley and a Southern Pacific connection which gives San Diego its only direct eastern service. California's southernmost city, 150,000 population, is also served by the Santa Fe, which runs north to Los Angeles.

The San Diego & Arizona Eastern itself is a recent creation, finished in December, 1919. The present company is controlled by the Southern Pacific, and the two through passenger trains over the line are connections with the SP's *Californian* to and from Chicago. Originally projected by Edward Harriman in the early 1900's when he controlled the SP, the SD&AE was finally pushed through to completion by John D. Spreckels, San Diego financier, with 50 per cent financial interest by the Southern Pacific.

Southern California railroad circles rumor that the SD&AE was built through Carriso Gorge at great expense mainly to furnish a top-notch scenic attraction for passenger traffic. A route which appears to offer less obstacles is available slightly to the north, and earlier attempts to build east headed in the northerly direction.

The gorge is 100 miles east of San Diego, after the railroad has dipped below the Mexican border for 48 miles and climbed 3660 feet to cross a summit on maximum grades of 1.4 per cent eastbound and 2.2 per cent westbound. For 11 miles the track winds through 17 tunnels and around curves as sharp as 20 degrees while the passenger delights in brilliant rock coloring

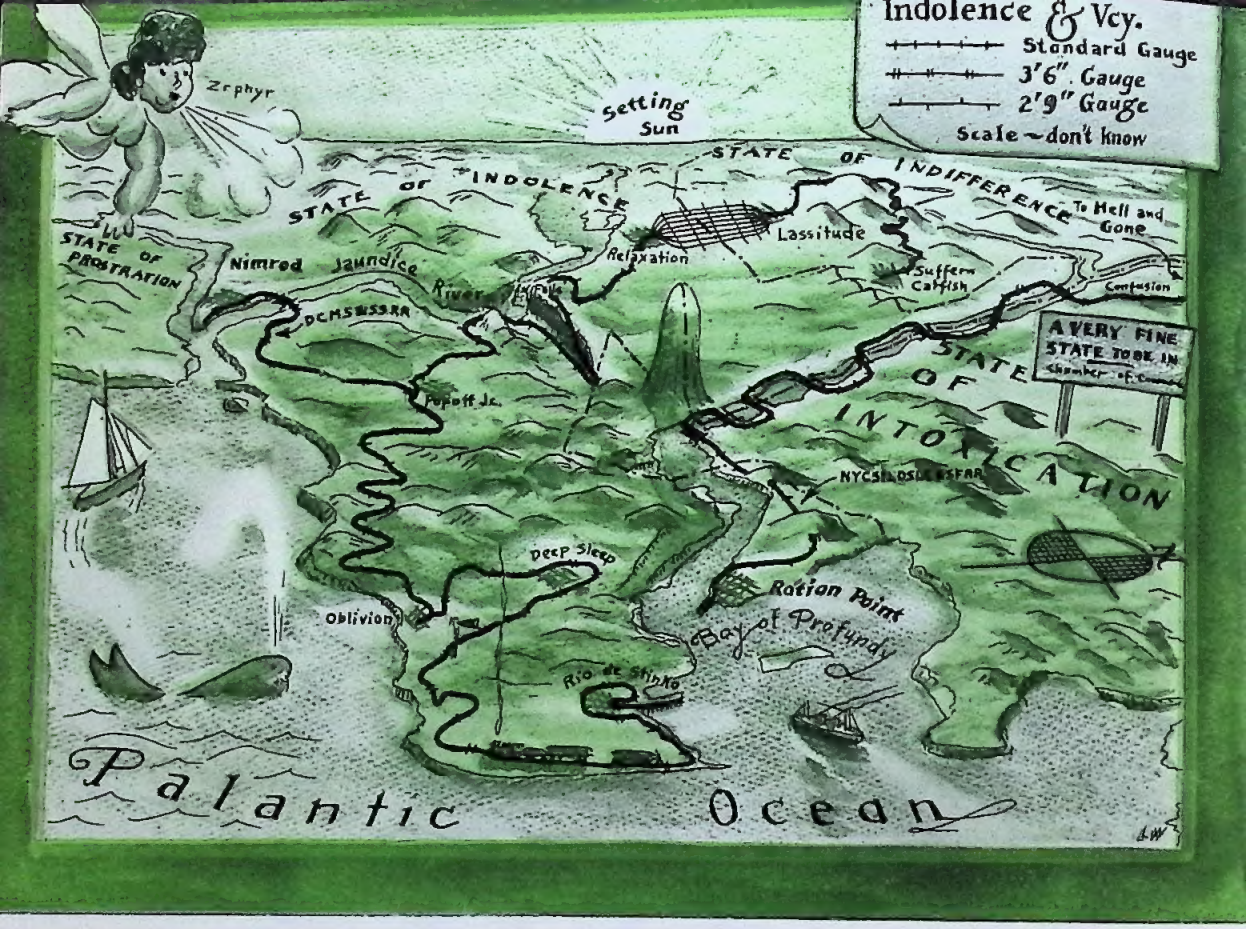
The 17 tunnels in Carriso Gorge range from 180 feet to 2650 feet in length, totaling 13,392 feet. Because of the loose rock formation they are timber-lined.

So tough is the terrain through the gorge, shown in all photos, that it was the last part of the San Diego & Arizona Eastern to be finished. Construction of the road was originally undertaken in 1907, and portions of the line to both the east and west of the gorge were in actual operation before the final stretch was completed in 1919. West of the gorge are the horseshoe curves at Redondo and the 180-foot-high steel viaduct at Campo.

much the same as in Grand Canyon. The right of way is a shelf carved into the rock walls of the canyon.

From the heights of the Laguna Mountains and Carriso Pass (at the north end of the canyon) the track drops rapidly down into the below-sea-level Imperial Valley, the bed of the old Salton Sea which man has made rich by irrigation. Not only does the San Diego line carry through traffic, but it takes the produce of this inland empire to the San Diego wharfs for peacetime export across the Pacific and on coastwise vessels.

Ten minutes before every train through the gorge a section man makes a careful inspection on a motor speeder. Most of the trains are pulled by small engines, 4-6-0's on the passenger trains and double-headed Consolidations on daily mixed freights. Some of the SP's big 4300's have run over the line in special movements. Operation is in close cooperation with the SP, and SD&AE equipment on through trains runs to Yuma, on the SP's Sunset Route.



From a sketch by Glutz.

Railroads of My State

★ This satire by the brilliant Count Kolya Shottski did not win a prize in Trains' contest.

Rio de Stinko
March 20, 1943.

Dere Editor:

I see in TRAINS magazine where you are givin away prizes for articles on railroads in anybody's state. Cripes, I thought, what's cookin with them editor guys? I said to myself, I'll give 'em a story about the r r's in my state, about which so far as I know nobody has ever wrote about. This writin business is a racket, I says, so I might just as well muscle in on it. Heck of a trick, tho, to play on the other guys, me rompin off with the hunnert smackers right under there noses. [Oh, yeah?—*Ed.*]

The place where I live is in the State of Indolence. It lays between 2 great rivers, is flat along the seacoast and they is mountains in the interior. It is bounded on the north by the State of Intoxication, on the west by the State of Indifference and on the south by the State of Prostration, all some states of, if you ask me, which you probably aint. It is bounded on the east by the Palantic Ocean.

We only got two railroads in our state, but they is looloos.

One of these streaks of rust starts out of Ration Point, on the Bay of Profundy [see map] an is called the New York, Chicago, St. Louis, Denver, Salt Lake City & San Francisco RR., and winds northward through the State of Intoxication for about a hunnert or two miles. It's a standard gage line. One

of the peculiar things about this r.r. is that it crosses the Stinko River 8 times between Ration Point and Confusion, back and forth between the State of Indolence and the State of Intoxication. It seems that the reason for this is that the politicians of these 2 states got together and agreed to split the graft from the company that built the bridges.

The other railroad is a hum dinger. It is the Detroit, Chicago, Milwaukee, Spokane & Sea Shore RR. From Nimrod on the Jaundice River to Popoff Jct. it is 3′-6″ gage, then standard gage to Oblivion, an then 3′-6″ gage again to Rio de Stinko. A branch line runs northeast from Popoff Jct. to Suffern Catfish, up in the hills, which is a hell-roarin minin town. This line is 2′-9″ gage from Popoff Jct. to Relaxation and standard gage the rest of the way.

But the screw-ball division between Relaxation and Lassitude is somethin to rite home about. It's got eight main line tracks and is standard gage. The reason for this is, the principal occupation of the citizens in that vicinity is cock fightin'! Boy, how them guys love to see them chickens maul each other. But it is agin the law in both states, so the games is always raided, sooner or later. So what does the DCMS&SSrr do but have eight 10-car trains lined up on the 8 tracks, steam up and redy to go. So when the sheriff shows up with a warrent and tears in his eyes, everybody rushes for the 8 trains and the 8 trains dash across the state line. Soon as they get to the other end of the 8 track line, they pile off with there cocks and the fights start all over again. But not for long. Soons the trains arrive, the sheriff of that county (both sherrifs is cock-fight fans and were on the train—one watches while the other makes ready for a raid) ambles over to the court-house and gets him a warrent to raid the games. In about a hour he comes back and a spotter sees him and gives the alarm. The gang dashes back to the trains again, carryin their cocks along. The r.r. has already turned the engines and the seats in the cars and the 8 trains is ready to go again. This keeps up for days, the same set-up at each end of the line. What the dumb clucks don't know is that both sheriffs is directors of the r.r. which is enjoying great prosperity thereby.

The main items of freight carried on both lines is fish, chicken feed, pin-ball machines and mine and agricultural products and machinery, like one-armed bandits.

As the NYCStLDSLC&SF RR only touches my state for brief intervals [see map] I wont say much about it. An the less said the better I'm sure you will say.

But in my state, the State of Indolence, the DCMS&SSrr is tops. Most of the passenger business is composed of fan trips. These guys just go nuts over it. Three different gages. Wow! At Popoff Jct. there is always a bunch of engines all painted and shined up settin on side tracks just waitin to be photographed. They never get a chance to run them, account of so many guys around all the time takin pictures. But I'm danged if I know how they even get any pictures. I went over there and tried, but when I set up my camera (a 8 x 10 that my Uncle Willie who used to be a prof over in Nimrod left me when he died in 1904) to take a picture,

The winners.

Here are the winners in TRAINS' Competition, announced in the February issue. The first-prize story will appear in the August issue.

FIRST PRIZE—$100.00

The Railroads of Victoria, Australia
By W. Lamoni Carr, 2533 S. 15th E., Salt Lake City, Utah.

SECOND PRIZE—$50.00
(Tie: Two Awards, $50.00 each)

The Railroads of Maryland
By E. L. Thompson, 1508 H St., N. W., Washington, D. C.

The Railroads of Switzerland
By Fred Eidenbenz, 30 Vesey St., New York, N. Y.

THIRD PRIZE—$25.00
(Tie: Three Awards, $25.00 each)

The Railroads of Minnesota
By George Cecil Cowling, 1770 Orange Wood St., Pasadena, Calif.

The Railroads of Montreal
By W. A. B. Davidson, 6758 Cote St. Luc Road, Hampstead, Montreal, Que.

The Railroads of Bethlehem, Pa.
By Judson L. Schaeffer, 915 6th Ave., Bethlehem, Pa.

MERIT AWARDS—$15.00 EACH
(Five Awards)

The Railroads of Pennsylvania
By George Beater, 1100 E. Main St., Millville, N. J.

The Railroads of Oklahoma
By Preston George, 2235 Newton St., Denver, Colo.

The Railroads of Massachusetts
By Edward P. Sanderson, Littleton, Mass.

Peoria Gateway
By Dave Lewis, 509 Kellog, Peoria, Ill.

Railroads of La Porte County, Ind.
By George L. Kennedy, P. O. Box 278, La Porte, Ind.

before I can yank my bean out from under the cloth, there was the whole simperin roundhouse crew lined up in front of the engine. I tried to shoo them away, but no go! Then I moved the camera to another kettle, but that damn camera hungry gang just marched along with me. They would just stand there and grin like a bunch of monkeys. So here is the one picture I got of a 3′-6″ gage 10 wheeler. Its got a headlight an a smokestack, but if its got wheels I'll never know.

Then I dashed over to Ration Point and tried my luck there—with the same result. So I give up in disgust.

I am throwin in the map by my man Glutz. I was afraid you would get that guy Linn Westcott to draw one and I couldn't stand for that. He never puts no whales in his maps. Who the hell likes a map with no whales? Mine's got a whale in it.

Thats about all. An I guess its enough. Excuse mistakes please. You can correct them—what the hell's editors for anyway. They ought to no how to spell, even if they can't tell a good story when they stumble on it in the dark.

Hope I've given you some idee of the r.r.'s in my neck of the woods. And, as I said before, what the hell do you expect for a hunnert bucks? I only got a A card and you no how it is tryin to get on trains these days, what with all the soldiers going to see there girls and the girls going to see the soldiers.

An, as I likewise said before, its a hell of a shame for me to muscle in on the other guys racket, walkin off with the 1st prize right under there noses. But dog eat dog I always say.

Yours truly,

Count Kolya Shottski.

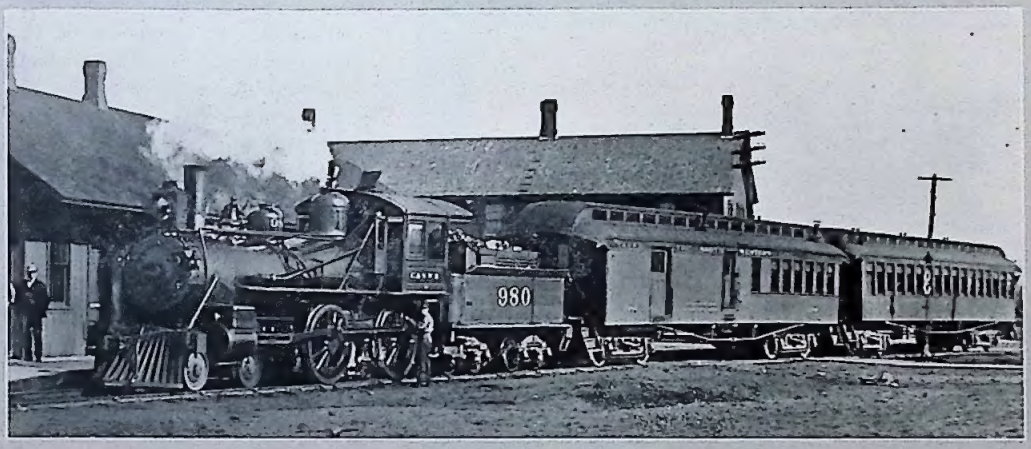
P. S. Send the check in time so's I can pay my next income tacks.

The Old North Western

The Chicago & North Western is a railroad of many traditions—the left-handed running upon double-track main line, the copious local passenger service and the onetime brightly colored yellow and green passenger cars now revived for the *"400"* streamliners. The Chicago & North Western is also an aggregation of something over 9800 miles of track stretching into and across the states of Illinois, Wisconsin, Minnesota, Nebraska, Iowa, Wyoming, and South Dakota. Its main line from Chicago to Omaha is a part of the historic Overland Route to San Francisco, and its route from Chicago to St. Paul via Madison is the Chicago-St. Paul short line.

It is quite easy to imagine that this splendid creation at its beginning broke ground in Chicago and with persistent energy and speed has been extending its lines from that terminal ever since. Properly, it did nothing of the kind. On the contrary, like most of our railroads, it is made up of dozens and dozens of small lines painstakingly combined through the years into the through and es-

Based on material in *Early Day Railroading From Chicago*, by D. C. Prescott.



Collection of Howard Christiansen, 2039 N. 39th St., Milwaukee, Wis.

tablished railroad routes of today. The Chicago & North Western proper began its career in 1859 as the reorganization successor of the Chicago, St. Paul & Fond du Lac Railroad, started as six-foot gauge in 1851 and changed to standard gauge in 1855. The only track then owned by the North Western was from Chicago to Janesville, Wis., 91 miles, and a short line from Minnesota Junction to Fond du Lac, Wis., 29 miles. This formed the nucleus upon which this entire railroad system has been built.

The old Galena & Chicago Union Railroad is often thought of as the forerunner of the Chicago & North Western Railway. Actually it forms a most important part of the North Western system but was started separately, a company chartered in 1836 and built west from Chicago. It started operation late in 1848 and consolidated with the Chicago & North Western in 1864.

The important part of the present-day North Western between Chicago and Milwaukee was built in 1855 as the Chicago & Milwaukee Railroad and came under C&NW control by lease in 1866. Thus were the three main lines out of Chicago created in the early 1850's: the line north to Milwaukee along the lake shore, the line northwest through Des Plaines to Janesville, and the main line straight west through De Kalb toward Clinton, Ia., and Omaha.

On the face of the later transcontinental accomplishments, we do not stop to consider the tremendous amount of railroad building done around 1850. In 1848 there was not a foot of high-grade railroad track west of Buffalo. Within the next nine years the principal main lines had been built to Chicago and hundreds of miles of track had already networked northern Illinois and southern Wisconsin. The rails were light and short and made of iron. Most locomotives were wood-burners; the method by which coal could be used in them had only then been discovered. All engines were beautifully adorned with brass jackets and furnishings, beautifully painted and decorated, and each was usually assigned to one engineer who gave it loving care.

The traditions of the Chicago & North Western, like the traditions of our other big railroads of today, grew up with the railroad men of generations ago, for it was originally, and still is, men rather than machines who make the railroads great. Railroad men of experience were scarce

William B. Ogden, first C&NW president.

Oldest locomotive still in service.

Jack R. Bell, 836 E. Miner Avenue, Stockton, Calif., is fireman on what he believes to be the oldest locomotive in the United States which is still in service: No. 1 of the Stockton Terminal & Eastern Railroad, pictured above shortly after her return from the Southern Pacific shops in Sacramento, where she received a new firebox, brasses, and side rods, besides many other things. The engine is 76 years old now and Bell hopes to see it pass the 100-year mark. No. 1 carries 135 pounds steam pressure—not much according to present-day standards, but she has walked away with as many as 50 stock cars. The Stockton Terminal & Eastern is a freight-only road serving the 19 miles between Stockton and Bellota, Calif.

in those early days of the North Western. Capable men were not hired, they were created—molded to form by the foremen and the superintendents.

In this era of expansion the demand for skilled labor far exceeded the supply. The New England states and New York and Pennsylvania simply emptied themselves of their choicest men and mechanics. The cream of the mechanical world took Horace Greeley's advice and went West, but there were still not enough trained men to operate the fledgling Chicago & North Western and its dozens of newly built neighbors. Master mechanics everywhere found it necessary to promote firemen to be engineers as fast as they could possibly be trusted to serve as runners. They did not call them engineers. About all they needed to know was the difference between the sound of steam and of water as they opened the gauge cocks to find out how much water there was in the boiler (glass water gauges then being unknown). Feedwater injectors had not been invented. Water was pumped by plungers attached to the crosshead. The runner needed to know when the pumps were working. He needed also to know how to disconnect the rods and get in to the end of his run with one side if a breakdown occurred to the other, and aside from that about all he was expected to know was how to keep the engine properly oiled and how to pull the throttle.

Often one of these new and inexperienced enginemen would report to the master mechanic that his engine needed attention. Perhaps the piston packing needed to be set out or the valves faced or something else done. The master mechanic usually had good reason to doubt that the engineer really knew anything about these matters.

Tom Burgess, master mechanic of the Galena & Chicago Union, before its consolidation with the Chicago & North Western, always asked his runners how they knew their valves needed facing or how they knew other work needed to be done. On one occasion he had promoted an Irish fireman to be runner of a locomotive, and later on this Irishman reported that his engine needed its valves faced. Tom said: "How do you know it does?"

"Well, be Jasus, a farmer came into Garden Prairie and told me so."

Probably some old engineer had quit railroading and gone to farming, and being at Garden Prairie station had heard Pat's engine come in with a blow and asked him why he did not get his valves faced. Tom had them faced all right; he simply wanted proof.

All of the engineers, however, were not of this class; many of them were high-grade, experienced young men who came direct from Eastern roads, for never before in the history of the country had such openings arisen for men to show what they were capable of doing and to lay foundations for careers of usefulness and profit. Real life began then for many who were capable but had been held back for lack of opportunity.

The year 1857 found the country in the midst of a bad financial panic, and the Chicago, St. Paul & Fond du Lac Railroad was five months in arrears of pay to all of its employees. That is to say, every new man had to work five

months before he received any pay whatever. At the expiration of that time he would be paid regularly, the first pay envelope being for the first month he had worked. A man coming West at that time with just money enough to reach Chicago had a hard time to get along if he entered the employ of the Fond du Lac Road. Nobody wanted him as a boarder because he wouldn't be able to pay his board for five months.

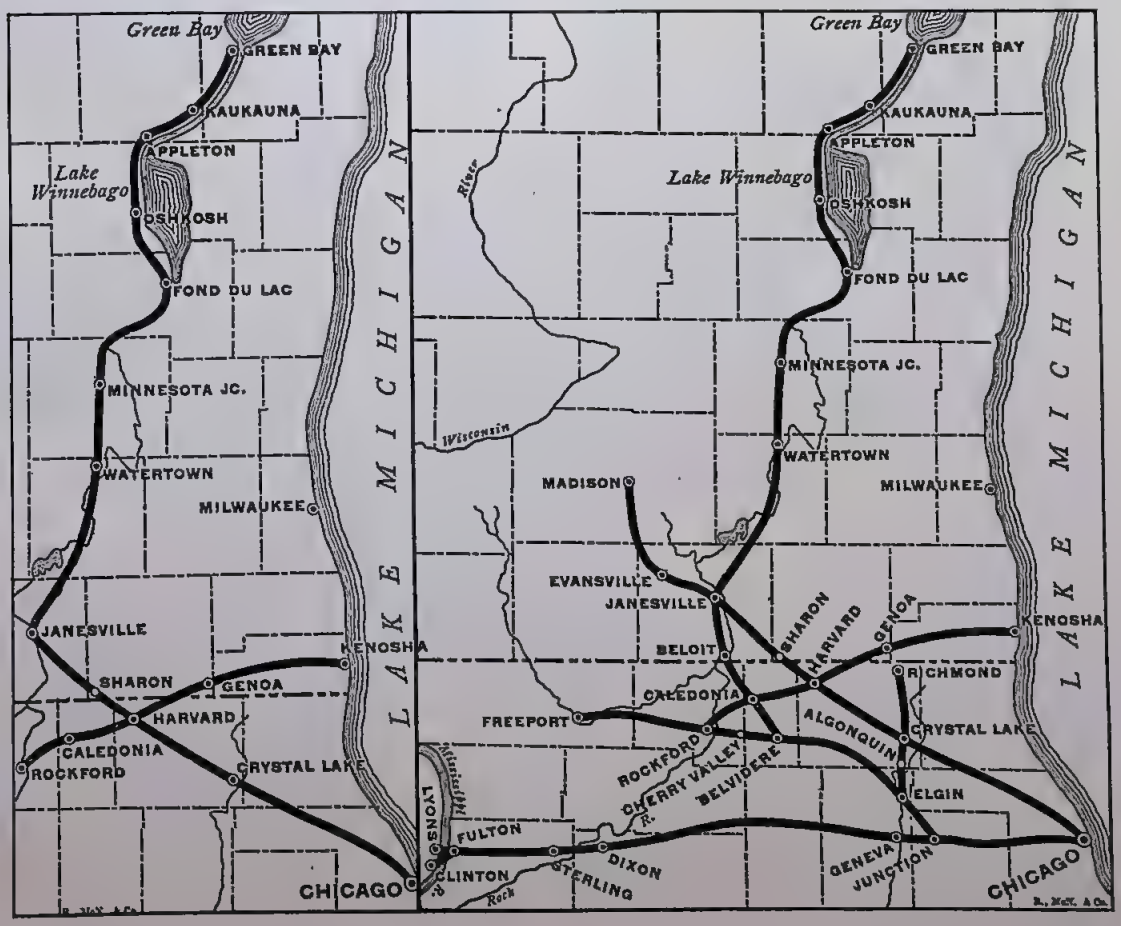
But some trusting boardinghouse keepers there were. After all, everyone was in more or less the same pickle in those days. The country was building up fast and there wasn't capital enough to do it all at once. Somehow or other people worked together and pulled through.

A railroad could not go on forever, of course, with its payroll five months behind, and eventually there came a reorganization. That was in 1859, when the Chicago, St. Paul & Fond du Lac became the Chicago & North Western. The bondholders who had conducted the affairs of the road for a time went by special train at a speed of nearly a mile a minute from Chicago to Janesville, and then and there the old Fond du Lac Road was put up under foreclosure proceedings at public aution and sold for some $200,000 or $300,000 to the bondholders. They then proceeded to organize the Chicago & North Western Railway. Many of the employees took common stock for their arrears in pay, and the stock really turned out to be an excellent investment.

All the locomotives then in use on the road were built by Hinkley & Drury of the Boston

The North Western grew in 1864.

Before the Chicago & North Western consolidated with the Galena & Chicago Union Railroad in 1864, the C&NW extended only 315 miles as in the map at left. After the consolidation the mileage was 609 (right). The lines in Iowa and Wisconsin that had been leased by G&CU were taken over by the consolidated company, making a total of 860 miles of owned and controlled road.



Collection of F. A. Cole, 419 Cottage Ave., Glen Ellyn, Ill.

Locomotive Works. They were called Hinkley engines and each had a name instead of a number. Some of the passenger engines had wheels six feet in diameter and others were 5½ feet. The freight engines were all five-foot machines. Passenger trains wheeled over the 91 miles to Janesville in 4½ hours, freight trains in eight or nine hours.

One awful Winter these Fond du Lac men had a terrible time. A storm set in and raged nearly a week—a blizzard with the mercury 'way below zero. Every road was blocked, and there was little use in trying to put a train through. As quickly, however, as it was thought wise, four engines were coupled and pushed up the line with a snow plow attached ahead. They were nearly a week in getting through to Janesville. They left an engine, the *Walter S. Gurnee,* partly on its side in the ditch at Crystal Lake, and the *N. K. Wheeler* in the ditch between Shopierre and Janesville. It was too cold to do anything more than to blow them out, shove the track over and run around them. The other engines had to be kept alive all the time to prevent freezing, and at night had to run out on the road to pump water into the boilers. The men had little sleep, not much food, and were very cold.

At work these engines would back off a mile, and when all was ready they ran for the snow drifts, going a mile a minute when they struck, and as they went in every damper and every throttle was closed. It was like going into a great cushion. Of course the snow flew, and when the avalanche stopped and the snow settled so one could see, the engineers poked their heads out to inquire if all was well along the line, and if so all would reverse and go back a mile for another onward rush. Just think of a week's work like this! Other engines were sent to replace those in the ditch.

The Chicago & Milwaukee Road* could not open its line; it had nothing but light Cuyahoga engines. It did have a splendid big plow, but not engine weight enough to make an impression on the snow banks. Therefore the management applied to the Fond du Lac Road for help, and four big Hinkley engines were sent over. They put the big plow ahead. Coupled to it behind was a Cuyahoga with the master mechanic, Jeff Newell, running it; then came the four Hinkleys. Thus equipped, they started for Milwaukee, and in four days got through safely, but the men declared that every time they ran forward into drifts they expected to crush that little Cuyahoga with Jeff inside of it, but every time Jeff would poke his head out and yell, "We're all right, pull out."

There were no train dispatchers in those days, no block stations nor interlockings. Trains ran by printed schedules or time cards, as the boys called them. Eastbound trains had a right of

* Then independent of the C&NW.

In the 1870's.

The Chicago, St. Paul & Fond du Lac built the Kinzie Street Depot (left) on the west bank of the Chicago River (North Branch) in 1856, and it was used by the C&NW until 1881-2, when the Wells Street Depot was opened on the present site of the Merchandise Mart. The C&NW's Janesville roundhouse (right) presented quite a spectacle in 1879.

Collection of Mark Richardson, Milton Junction, Wis.

track one hour behind their time, and all westbound trains had to wait one hour at the regular place of meeting and then proceed, keeping one hour behind time. The eastbound train could run if more than one hour late, but it had to look out for the westbound which was coming exactly one hour behind its time. The injunction was, "In case of doubt always adopt the safe side." The Fond du Lac Road never had a collision. After trains had passed each other with a clear road ahead, they simply lit out and made up all the time they could.

The right of way was not fenced in. Almost the entire line ran through open fields and over unprotected road crossings. As a consequence scarcely a day passed that did not see animals killed or so maimed that a killing was necessary to relieve them. There was always danger, too, of being thrown off the track if an ox or horse was run over and got under the engine. It was, therefore, an understood policy of all the engineers that if the train could not be stopped before reaching an animal, the only wise course was to open up to the highest speed and by sheer force of the blow knock the animal to one side, clear of the track.

One of the engineers, Dick Killenbeck, finally lost his job, not because of incompetency as an engineer, but by reason of some side play to which the company objected. His train was the way freight, and on arriving at a station Dick would make his fireman do the switching, if any was needed, while Dick himself would be at the nearby general stores buying calves and butter and eggs. These he loaded into the caboose and took free of freight charges to Chicago, where he turned them over to a commission house. If Dick were not ready on his engine when the conductor gave his signal to go ahead, the fireman would pull out with the train just the same, while Dick would walk over on top of the cars from the caboose to his engine. He was doing a land-office business, but the railroad was not.

The officials of the Fond du Lac Road finally concluded that Dick's operations were seriously affecting the road's revenues. They decided that it was useless to try to pay interest on bonds and at the same time haul Dick's calves for nothing; it could not be done. In talking this over with Dick it became clear that either he or they would have to resign, so he very magnanimously decided to give up the business and quit. After that the road began to make some money.

The Fond du Lac Road connected at Janesville with a railroad called the Milwaukee & Mississippi*, which extended out to Prairie du Chien on the Mississippi River. A line of passenger boats operated between that place and St. Paul, Minn., constituting a continuous line by rail and river from Chicago to St. Paul. A similar competing line existed over the Chicago

* Original portion of the present Milwaukee Road.

Howard Christiansen collectio

The old North Western, like the present-day C&NW, was strong for Schenectady (now Alco) engines. No. 17, shown here in the Milwaukee lake-front depot about 1899, was built in 1895.

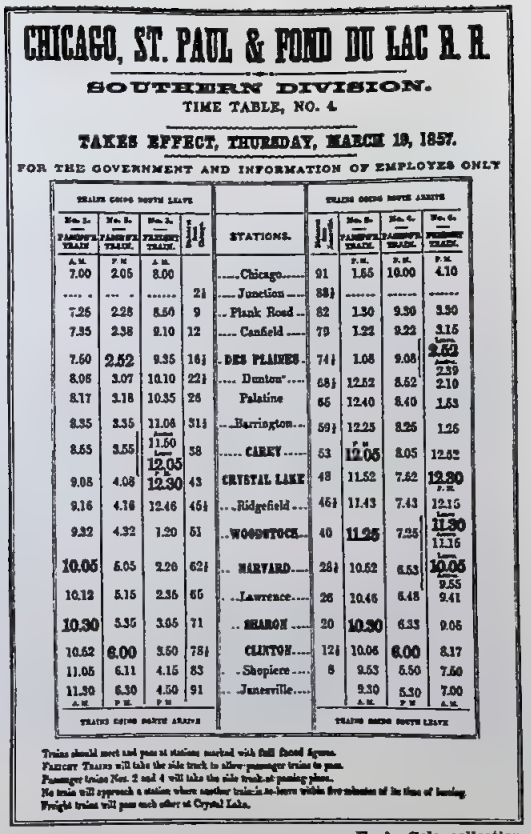
& Milwaukee and the Milwaukee & La Crosse* railroads to La Crosse, Wis., and then by another steamer line to St. Paul. The competition was a hot one, for at that time La Crosse was the extreme northwestern point which could be reached by rail.

The arrangement worked nicely so long as the water in the river was high enough to permit unobstructed navigation, but in time of low water trouble was always in store for the connecting railroad lines, because the boats were constantly getting stuck on sand bars. This invariably made them late at La Crosse and Prairie du Chien, and then the race would begin to make up time and land passengers in Chicago in time for the Eastern trains. Talk about the *Twentieth Century Limited* and other fast trains, they do not run any faster than did the trains of those days, and that, too, over short bars of T rail and poorly ballasted track. There were no sleeping cars then, no vestibuled platforms nor automatic couplers, no air brakes; but with men of steel, things were made to fly, and no mistake about it.

Conductor Arthur Hobard had the faculty of landing lady passengers at way stations without actually bringing the train to a full stop. He simply gave them a toss in such a way that they would land easily on their feet and no harm done; and of course John Hull, the baggageman, would drop off the trunks, and all this time Hobart's hand would be in the air signaling the engineer to go ahead. This was the kind of railroad service they had in the 1850's when a train was late.

About this time the Galena & Chicago Union Railroad looked with covetous eyes upon this St. Paul business, and proceeded hurriedly to arrange a connection for the purpose of gathering in a share of it. To that end it built a line from Belvidere to Janesville, meeting the Milwaukee & Mississippi at that place and coming in on the opposite side of the the same depot occupied by the Fond du Lac and M&M roads. The G&CU advertised extensively its ability to put trains into Janesville as quickly as the Fond du Lac, though it had some 12 miles farther to run; still with this handicap it lowered the scheduled time usually made by the Fond du Lac, and a train hauled by a big engine called the *Whirling Thunder* started in on the run. The Fond du Lac train leaving Chicago at the same time arrived 30 minutes ahead, and the boys lined up on the platform to welcome

* Now Milwaukee Road.



CHICAGO, ST. PAUL & FOND DU LAC R. R.

SOUTHERN DIVISION.

TIME TABLE, NO. 4.

TAKES EFFECT, THURSDAY, MARCH 19, 1857.

FOR THE GOVERNMENT AND INFORMATION OF EMPLOYES ONLY

TRAINS GOING NORTH LEAVE						TRAINS GOING NORTH ARRIVE		
No. 1. PASSENGER TRAIN	No. 3. PASSENGER TRAIN.	No. 5. FREIGHT TRAIN.	Freight Train No. 2	STATIONS.	Freight Train No. 4	No. 2. PASSENGER TRAIN.	No. 4. PASSENGER TRAIN.	No. 6. FREIGHT TRAIN.
A.M.	P.M.	A.M.				P.M.	P.M.	P.M.
7.00	2.05	8.00		.....Chicago.....	91	1.55	10.00	4.10
.....	.....	.....	2¼	.....Junction.....	88¼	.....	.....	.....
7.25	2.28	8.50	9	...Plank Road...	82	1.30	9.30	3.30
7.35	2.38	9.10	12	.....Canfield.....	79	1.22	9.22	3.15
7.50	2.52	9.35	16¼	..DES PLAINES..	74¼	1.08	9.08	Leave 2.50 / Arrive 2.39
8.06	3.07	10.10	22¼	.....Dunton".....	68¼	12.52	8.52	2.10
8.17	3.18	10.35	26	Palatine	65	12.40	8.40	1.53
8.35	3.35	11.06	31¼	...Barrington...	59¼	12.25	8.25	1.26
8.55	3.55	Leave 11.50 / Arrive 12.05 P.M.	38	.....CAREY.....	53	12.05 P.M.	8.05	12.52
9.08	4.08	12.30 P.M.	43	CRYSTAL LAKE	48	11.52	7.52	12.30 P.M.
9.16	4.16	12.46	46¼	...Ridgefield...	46¼	11.43	7.43	12.15
9.32	4.32	1.20	51	..WOODSTOCK..	40	11.25	7.25	Leave 11.30 / Arrive 11.15
10.05	5.05	2.20	62¼	.. HARVARD.....	28¼	10.52	6.53	Leave 10.05 / Arrive 9.55
10.12	5.15	2.35	65	...Lawrence....	26	10.45	6.45	9.41
10.30	5.35	3.05	71	.. SHARON	20	10.30	6.33	9.05
10.52	6.00	3.50	78¼	CLINTON.....	12¼	10.06	6.00	8.17
11.05	6.11	4.15	83	..Shopiere.....	8	9.53	5.50	7.50
11.30 A.M.	6.30 P.M.	4.50 P.M.	91	...Janesville....		9.30 A.M.	5.30 P.M.	7.00 A.M.
TRAINS GOING SOUTH ARRIVE						TRAINS GOING SOUTH LEAVE		

Trains should meet and pass at stations marked with full faced figures.
FREIGHT TRAINS will take the side track to allow passenger trains to pass.
Passenger trains Nos. 2 and 4 will take the side track at passing place.
No train will approach a station where another train is to leave within five minutes of its time of leaving.
Freight trains will pass each other at Crystal Lake.

F. A. Cole collection.

the Galena train. It came in with a scream and a rush and a roar, rounding the curve at full speed, fetching up at the depot almost with a bang. The engineer hauled his lever over to reverse and applied steam in order to stop at the depot. It was a great event and the Fond du Lac boys cheered; but the scheme did not work. The Galena did not have an engine that could turn its wheels fast enough to make the run as advertised, and it did not get the business; but it caused lively railroading while it lasted.

The officials of the Fond du Lac Road were somewhat ashamed of their employees, who were rather a ragged lot, unable to buy new clothes because they could not get their pay regularly. John Hull, baggageman (in after years superintendent of the West Wisconsin Railroad), stood in his car door at the depot one morning ready to take in trunks, when Assistant Superintendent George L. Dunlap noted his appearance and said to him, "John, why in the world don't you get some better looking clothes? You are positively ragged."

F. A. Cole collection.

At Marinette, Wis., in the '70's.

Following its organization from the old Fond du Lac Road in 1859, the Chicago & North Western marched steadily forward. No time was lost in connecting the two portions of the line with 57 miles of track between Janesville and Minnesota Junction, and extensions shot northward until in 1871 the road reached Marinette, Wis., on the Michigan border at the edge of Green Bay. Here Hinkley engine No. 77 of the old Fond du Lac Road, built in 1855, was photographed (above) some time before it was rebuilt in 1880. It was finally scrapped in 1898.

"Well," said John, "I would get the clothes if I could only get the money to pay for them."

Dunlap instructed him to go down to the office on his return trip and he would see that he got enough for some clothes if for nothing more; and yet at that very time Dunlap himself hadn't a decent suit of clothes to put on, but wore an old tan-colored overcoat similar to the one made famous by Horace Greeley. Dunlap did not object, however, if his men dressed better than he did. He recognized the fact that they were exposed to public gaze more than he was, and that the road's respectability was at stake.

Trainmen did not wear uniforms then. Conductors wore a simple ribbon around their caps with the word "Conductor" printed on it, and this, coupled with the way they yelled "Tickets!" was sufficient to distinguish them from the passengers.

Some folks might think that the conductors of those days would be likely to have money because they collected considerable cash from passengers who got on without buying tickets. Freight trains carried passengers occasionally in the caboose. The restrictions of the present day did not prevail then, and conductors had chances to steal that are impossible now, but it must be understood that all the conductors of those days were absolutely honest. On the Fond du Lac Road, especially, they had to be. It was unsafe not to be, because for one of them to have any money whatever when off duty was a sure indication of dishonesty and he would be discharged. But no conductor of that road lost his job on that account. It is true that some years later one of them was looking around for somebody with whom he could place a thousand dollars at interest, but then he had a legacy from his grandmother, of course.

The new C&NW company, after it was organized in 1859, was financially much stronger than its poor predecessor, and immediately began the extension of the main line through to Minnesota Junction, thus closing the gap to Fond du

Lac, Wis. Beyond that city the track was rapidly laid to Oshkosh, Neenah, Appleton, De Pere, and Green Bay.

It also built a road from Escanaba, Mich., to Ishpeming, tapping the iron mines of the Marquette mineral range, and built ore docks at Escanaba. It built new and larger shops and a roundhouse in Chicago, and four gravel trains with 60 laborers on each train were put to work hauling gravel from the great pit at Cary and distributing it along the line to Chicago and in the Chicago yard. The way those trains whirled that material along the line was a wonder. A train would come down Palatine hill at a frightful pace, and as it approached Palatine the engine would uncouple to make a flying switch; it ran ahead, the switch to the siding would be opened by a man ready there, and the instant the engine passed the switch to the siding the man closed the switch to the main line and the train flew by. The engine then backed out and rushed on after the train, and in this manner the engine would be ahead of its train on the return trip to Cary. But the velocity of that train passing Palatine was sufficient to carry it nearly to Dunton, seven miles away on level ground.

The men did not live, they simply existed all that Summer, but they got their pay regularly. The C&NW, with improvements afoot and money in the bank, was a far cry from the old Fond du Lac Road it had succeeded.

The ex-Fond du Lac Road was not long the chummy little Chicago & North Western. Railroads have always been confronted with the danger of having their lines swallowed up or controlled by larger companies. Big fish sometimes eat little fish, but rarely does the little fish eat the big one. The little C&NW was the exception. Its *coup de maitre* was the consolidation with the Galena & Chicago Union in 1864.

The Galena line was a progressive road. It was the first to lay a track west from Chicago. It was a prosperous affair, and a huge factor in promoting Chicago's growth. The North Western wanted it. For the little 315-mile road to consolidate with the larger line (294 miles owned, 251 miles controlled) meant an appreciation in value of C&NW stock. It was a case of the tail wagging the dog. Legally the two roads consolidated, but practically the C&NW took over. The cars of the Galena Road were relettered Chicago & North Western. William B. Ogden, the man who built up the C&NW, retained the presidency, and most of the directors were the same. The days of the little old Chicago & North Western were at an end. By absorbing the Galena Road it had become a system with which to reckon and from then on its march was majestic and irresistible.

The main line west at sunset.

J. A. Crawford, 750 13th Ave., S., Clinton, Ia.

Kirkwood Hill

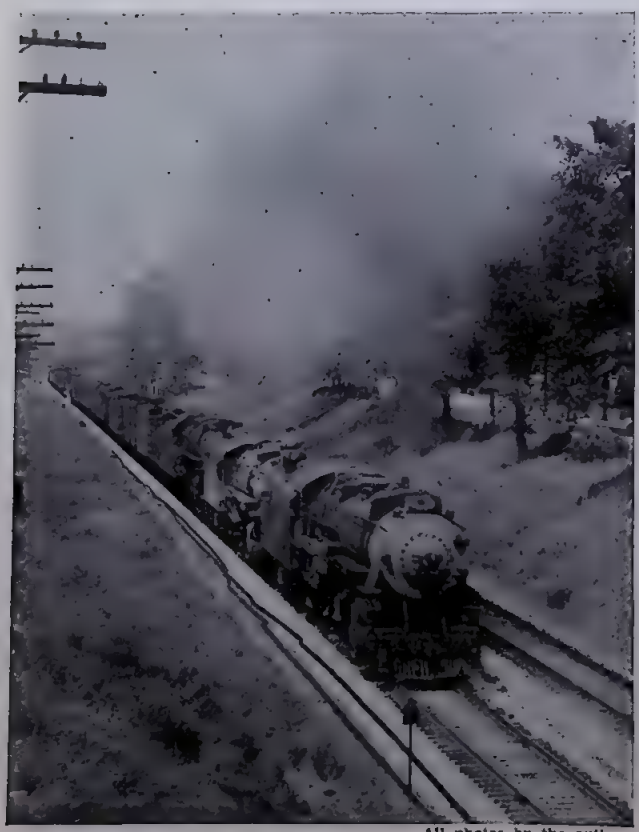
★ The Missouri Pacific uses helpers at one spot to get the most out of its St. Louis-Kansas City line.

By Wayne Leeman.

Not far west of St. Louis is a big hill with its crest at Kirkwood, Mo.—a hill which barred the early builders of the Missouri Pacific Lines from laying a dream of a low-level freight line on the 288 miles between St. Louis and Kansas City. Were it not for that hill, the MoPac would have a line with maximum grades of 0.5 per cent, over which its standard road engines—rebuilt Northern type 2100's, the fastest engines on the road, bar none—could haul 7225 tons without help. But this same engine that can handle that impressive weight on the flat stretches misses by many a ton of having any such capacity on the nearly one per cent grade of the hill. A single 2100 leaving St. Louis westbound for Kansas City can have only 3145 gross tons behind it to reach Kirkwood without help. When the grade is encountered eastbound at Valley Park, 18.96 miles west of St. Louis, the same engine gets a maximum hauling capacity of 2975 tons.

So while impressive enough trains could be run over the line without helper service, the road chooses to use helpers on the basis of getting the maximum out of the most of the line. Helper engines of comparable power to road locomotives double the tonnage maximums on the Kirkwood ruling grade. With an average of 80 million pounds of freight moving both ways each 24 hours, it takes some big trains and fast ones to handle the load. Helpers do their part by boosting daily at least seven of the 10 regularly carded redball manifest freights, often exceeding that total with assistance to the frequent extras caused by war traffic.

Power for such runs usually consists of a 1700 helper and a 2100 series road engine, the latter trailing a 10,000-gallon auxiliary water tank. They are



All photos by the author.

Triple-header.

On rare occasions, such as at left, when Mikado 1407 (second engine) was being taken to the Sedalia shops under power and thus earning her keep as she went, triple-headers are seen on the hill, but ordinarily a single helper is used. At right is pictured one of the reasons for the single track west of Kirkwood: a narrow tunnel about a mile east of Lake Hill Junction. At far right is a comparison of levels of the Frisco (left tracks) and the Missouri Pacific. The switch shanty and signal are at Lake Hill Junction, 17.5 miles west of St. Louis. When the two railroads reach Valley Park (smoke at left) they are parallel and at equal grades. The Frisco, as might be expected, operates lighter freight trains than the MoPac.

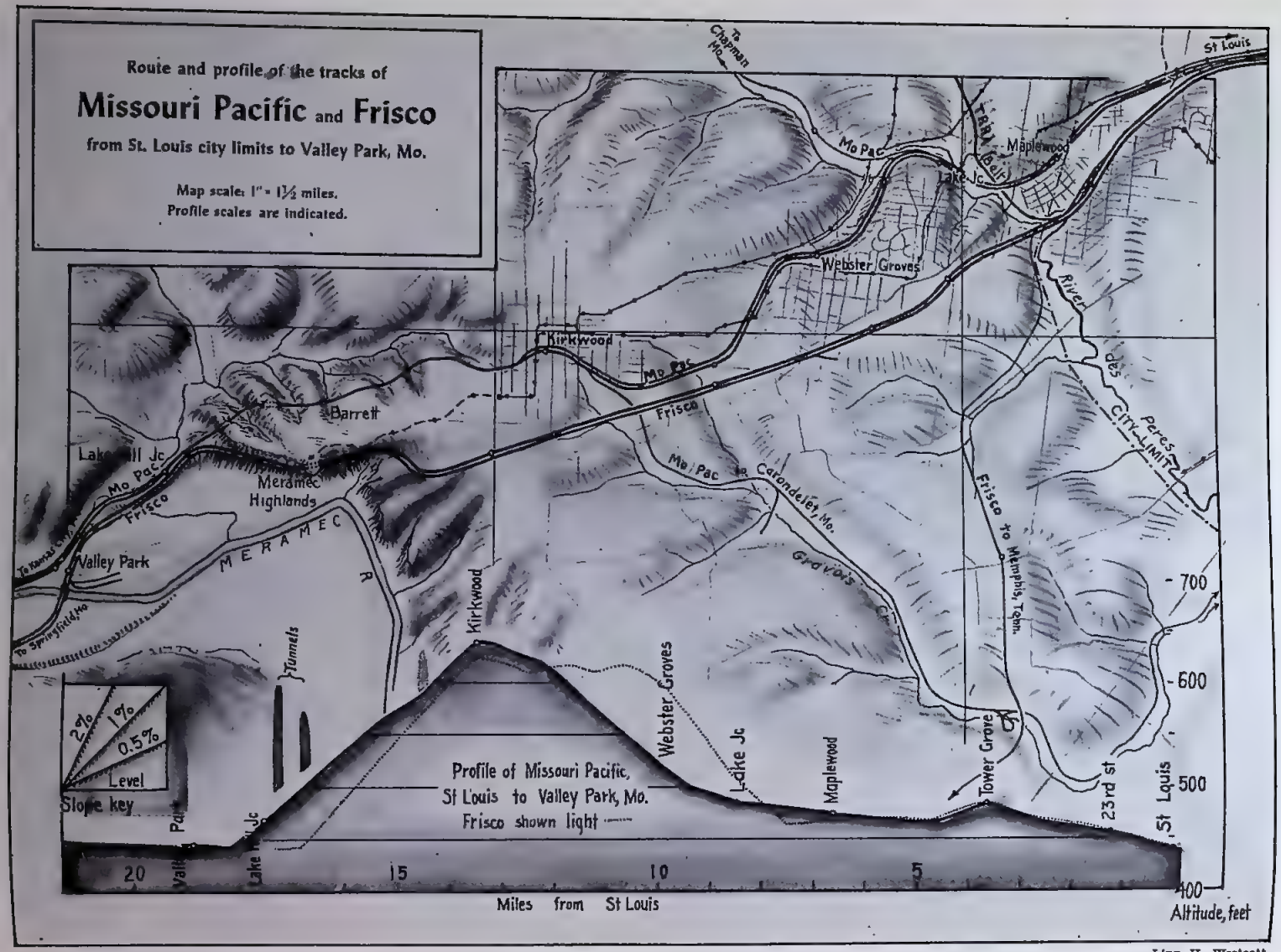
Pulling the pin.

In this dramatic photograph by the author, Conductor John Wilson of St. Louis has just uncoupled the helper engine from the caboose of eastbound Advance 62, allowing the train to ramble on through Kirkwood to St. Louis while the helper returns to Valley Park to await regular 62. Helper engines on the eastbound grade make the run backwards, coupled to the rear of the train.

coupled together at the Missouri Pacific's only roundhouse in St. Louis, at Ranken Avenue, less than a mile west of the huge, somber Union Station. Crews and engines wait near the roundhouse until notified their train is ready. Then they back eastward a short distance to couple on. After air pressure is pumped up and routine checks are completed, the engines shatter the relative calm of the 23rd Street yards by getting under way westward out of the Mill Creek Valley. An average train using a helper will run from 4000 to 5500 tons and will have from 100 to 120 cars.

Elevation at the point the run starts is 452 feet above sea level. Things are still on a pretty level keel at the suburban Maplewood Station six miles from downtown St. Louis, and train speed usually is around 45 miles an hour, for all momentum soon is to be needed. At suburban Lake Junction Station, where a branch line comes in and commuters catch their morning train, the big climb begins. Distance from St. Louis is 8.42 miles and elevation is 488 feet. From here on to the crest the right of way turns and twists, following a ridge and arching steadily upward. Exhausts on the big locomotives change from a roar to a pound. By the time Glendale Station, elevation 598 feet, distance 11.7 miles, is reached, the pound is turning to blasts. Speed may drop to about 10 miles an hour at this point.

The country through which the line passes from Lake Junction to Kirkwood is beautiful. It is an all-suburban area, thickly populated with some of the best homes in the St. Louis



Linn H. Westcott.

area. Well kept lawns back up almost to the edge of the tracks. Large houses can be seen from the engine. And while there are no surrounding mountains to give the impression of steep slopes and ruling grades, the deep cuts and tremendous fills do their part to prove the terrain was no pushover for the construction crews.

The pounding of the exhausts continues on through Webster Groves, Glendale, Oakland, and Woodlawn, to the peak at Kirkwood, elevation 634 feet, a climb from Lake Junction of 146 feet in five miles. At Kirkwood, the road engine often pauses for water to avoid a later stop. Sometimes the helper cuts off then, or it may cut off a mile west of Kirkwood, when both engines stop expressly for such a divorcing maneuver.

The helper, after the freight has gone west, either runs light back to St. Louis or goes on to Valley Park to wait to assist an eastbound train. Having no way to turn around, it waits on a spur for the train to run by, then couples tender-first to the caboose and pushes the train toward Kirkwood.

This phase of the pusher service runs over a stretch of rails that has been a headache to operating men from the time the line was completed about 1853. For three miles starting at a point a mile west of Kirkwood, the line is reduced to single track and drops sharply. In that distance are two tunnels cut through solid rock, one 630 feet long and the other 440 feet. The approaches to them are through cuts faced with rock, often nearly 50 feet in depth. Cost of construction for the first 140 miles from St. Louis through Kirkwood and on west was $47,000 per mile, more than twice the estimated cost. The tunnels and the big cuts through which the pushers now run contributed their share in that per-mile total.

Cost of this helper service runs into thousands of dollars annually. The three-man crews of engineer, fireman, and conductor on each engine cost $25 in wages for an eight-hour day, and as many as six crews have been used on occasion during a 24-hour period. Then there are the usual mechanical expenses.

Although other engines have been used occasionally, the 1700 series 2-10-2's are the darlings for the helper work. And they are capable enough for the task. They run in numbers from 1701 to 1714, the first of their type to be purchased by the Missouri Pacific. Alco-built in 1916, they have a tractive force of 72,300 pounds, a drawbar pull at level of 67,875 pounds, and claim a level, no-curve hauling capacity of 11,312 tons. This exceeds the same specifications for the 2100's, still being converted from 25 engines of a 1900-numbered line of Berkshires. The 2100's have a tractive force of 66,640, drawbar pull on level track of 61,785, and hauling

World's busiest station.

What is the world's busiest station? Perhaps Grand Central, or Pennsylvania Station, South Station in Boston, or Waterloo in London? Maybe. But there's one that belongs in that list and of which you've likely never heard. It's Flinders Street Station, in Melbourne, Victoria, Australia, and a typical day's passenger count shows it surpassing all the others!

Next month you'll learn about the fascinating and busy railroads of Victoria, Australia, in the first-prize-winning article by W. Lamoni Carr—an authentic and interesting description such as could be written only by one who has lived in Australia and used the Australian railroads. Reserve your copy now at your news stand.

The 2117, on the head end of a Kansas City-bound freight, pops out of the tunnel nearest Valley Park.

A day with helper 1702.

Helper 1702 hooks onto Train 75 (77 loads, 33 empties) in the yard at St. Louis. At Lake Junction begins the task of climbing 146 feet in five miles to Kirkwood, where 1702 uncouples as the road engine pauses for water; 1702 proceeds to the spur west of Valley Park and the crew waves to the *Missouri River Eagle*, eastbound to St. Louis. Engineer John Dauernheim and Fireman Clarence R. Holmes pose for a picture between runs. When eastbound Advance 62 arrives, 1702 is coupled tender-first to the caboose and the backward push to Kirkwood begins. The tunnel is a few miles west of Kirkwood. At lower right corner 1702 is pictured at the end of double track west of Kirkwood, eastbound from Valley Park.

capacity on level of 10,300 tons. [See "Missouri Pacific Locomotives," May 1942 TRAINS.]

Although the Santa Fe's have a rating more powerful than the others, they get it by smaller driving wheels, 63-inchers to the new engines' 75-inchers. The fact is reflected in speed maximums, too, for the 2-10-2's are limited to 55 miles an hour compared with 90 for the new machines. These listings are for the engine, not the track, which is something else again. Although horsepower is a rather meaningless basis of comparison in service over heavy grades, the 2100's at 10 miles an hour develop 1780, while the 1700's at the same speed turn out 1950. The 2100's have a higher maximum horsepower, but develop it at a much higher speed than the 1700's. Both types are far from maximum horsepower at 10 miles per hour. The steam locomotive works up its horsepower slowly as the speed increases, for the engine must always be working at a speed geared directly to the speed of the train. The Diesel, on the contrary, develops its maximum horsepower quite quickly, for the Diesel engine can be turning over at high speed and generating plenty of power even though the electric traction motors are "geared down" in full series and the locomotive is just starting. This is what gives the Diesel its relative snap at low speeds. But we are digressing from our story.

Probably the heaviest train ever to run on the line was operated, somewhat as an experiment, westward last April. It was a company coal train of 99 cars with tonnage weighing right at 7000. Three locomotives dragged it to Kirkwood, whereupon two cut off and one was enough on the water-level route along the Missouri River to get the train the rest of the way to Kansas City.

Historically speaking, although helpers ran in an irregular manner for some years, more regularity began to develop in the 1930's when the road bought the heavy Berkshires and put them in service. Because of their increased capacity it became advantageous for the first time to get heavier trains over the hill, and helpers got the nod for the task of doing it.

But long before that the system's engineers had been casting about for some way to eliminate the tunnels and single track, if not the grade, in the Kirkwood-to-Valley Park sector. Matters progressed to the point where in 1929 a 10-million-dollar project had definitely been outlined. But the depression hit it a death blow. At present the engineering experts have plenty of bad words but no definite elimination proposals for the stretch. It looks as if helpers will be around for some time to come.

Casey Jones in Teheran.

It took two 80-ton locomotives to get her over the mountain. Howard Blair of Breckenridge, Minn., who used to fire on the Great Northern line, held the throttle of engine number one, and Chester Clark of Muscatine, Iowa, kept the steam up. The bells rang and the whistles blew, and there were Yankee brakemen running along the tops of the cars and a Yankee conductor sitting at the top of the caboose, with his head out of the window, and, we hope, chewing tobacco and spitting clear over the right of way.

And we think Casey Jones was there, too, visible to the faithful, and quite a crew of railroad men older and deader than Casey Jones—that is, not dead at all in the grand traditions of the iron road. They'd run trains on both sides during the Civil War. They remembered the linking of the rails at Promontory Point, and when buffalo were a menace, and when you coupled cars by hand and didn't feel like a real railroad man if you had all your fingers, and they had known trouble from snow and washouts and grasshoppers and forest fires, and some had gone to glory in a wrestle of steel moguls meeting on curves on single-track lines.

So they rode with Sergeant-Engineer Howard Blair, and with Corporal-Fireman Chester Clark, and the whistles blew and the bells rang half the time when you couldn't see who was doing it. And this was how, a few days ago, "the first all-American train carrying United States war supplies to Russia" steamed into Teheran. Take her from the Persian Gulf to Teheran? Why, that crew would have taken her through hell if they had been ordered to, and brought her in on time. Now she's lugging stuff for the Russians, with a Russian crew, but maybe Casey is still aboard—for Casey doesn't ask what language a man speaks or what his politics are. If he can keep that freight rolling, and loves the click of the rails, and the rhythmic whoosh of steam, and the reel of the high cab, and fire in the box and wind in the eye, Casey is his friend and will go along.—New York *Times*.

See page 48 for a picture of an American-built locomotive for Persian service.

Union Pacific.

The boiler heels to one side over front of engine truck on a curve.

Union Pacific.

"Big boy" takes coal.

Probably for want of a better nickname, the Union Pacific's huge 4-8-8-4's are called by the undignified and unrailroadlike handle of "big boy." The earlier 4-6-6-4 UP type, first of the high-speed articulateds, early took the type name Challenger. Maybe the 4-8-8-4 type should be dubbed "Champ," for champ it is, in horsepower and size. Length of engine and tender over couplers is 132 feet 9⅞ inches, total weight in working order nearly 600 tons.

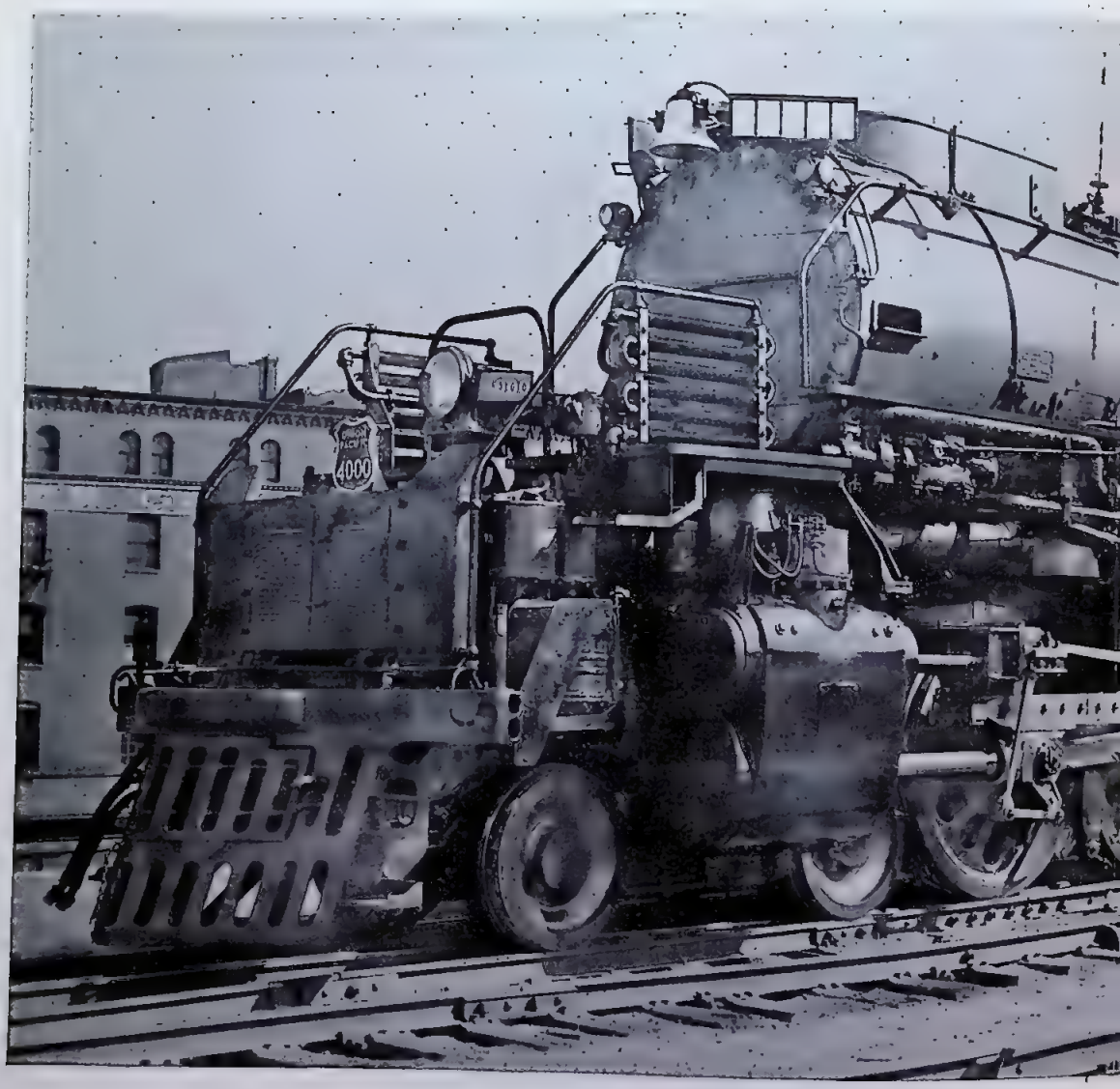
Union Pacific 4000 Series

For more than a year the 20 "big boys" of the Union Pacific have been pulling unbroken full-length freight trains over the critical Wasatch Mountains crossing between Green River, Wyo., and Ogden. The same trains which are hauled by lighter engines on other portions of the road are now taken over by the 4000 series 4-8-8-4's without expensive switching and cutting of train length, and these world's most powerful steam locos do the trick without helper service on the 1.14 per cent grades.

It was in the Fall of 1941 that the UP took delivery of these unprecedentedly large engines. Their starting tractive effort, 135,375 pounds, is surpassed not only by the 140,000 pounds of the Northern Pacific Yellowstone type (2-8-8-4), but by the 140,000 pounds of the Duluth, Missabe & Iron Range [Nov. '41 Trains] 2-8-8-4. But tractive effort is old-fashioned as a measure of locomotive capability. More in accord with present-day operating practice is the measure of horsepower, which tells how much work can

Union Pacific.

No. 4000, the first "big boy," on test with dynamometer car.



be done within a limit of time. The UP big boys are designed for a maximum speed of 80 miles per hour, and maximum horsepower of about 7000 is developed at 70 miles per hour.

The major problem in designing these locomotives was to provide a running gear flexible enough to take the immense length of the engine smoothly around curves and over vertical curves (at the beginning and end of grades) and yet rigid enough to keep the engine from nosing when running at speed on straight track. This has been done so successfully that the 4000's not only are doing the fine pulling job expected of them, but ride around curves with complete absence of the series of jerks so characteristic of many steam locomotives.

Specifications:

Tractive force
Cylinders, diameter and stroke
Drivers, diameter
Weight on drivers
Weight on front truck
Weight on trailing truck
Total weight of engine
Total weight of engine and tender
Tender capacity 25,000 gals
Steam pressure
Grate area
Heating surface (evaporative)

The latest series of Challen
very much like their 40

Union Pacific.

	135,375 lbs.
	4 of 23¾" x 32"
	68"
	540,000 lbs.
	97,000 lbs.
	125,000 lbs.
	762,000 lbs.
	1,197,000 lbs.
ater; 28 tons coal	
	300 lbs.
	150 sq. ft.
	5889 sq. ft.

ger type 4-6-6-4's look
0-series big brothers.

Railroad Photographs, 47 Royal St., Allston, Mass.; by Arthur Stensvad.

BOSTON & PROVIDENCE

STOUGHTON
B. & P.

Arthur Curran collection.

Variety in Old Power

★ Before the establishment of standards, even small roads like the Boston & Providence had many designs of same engine type.

By the late Arthur Curran.

RAILROAD historians know of the great variety of motive power used in the old days, prior to the establishment of standards. The Erie was an outstanding example of this. It may surprise some, however, that such a small road as the Boston & Providence [now part of the New Haven] had considerable variety in this respect.

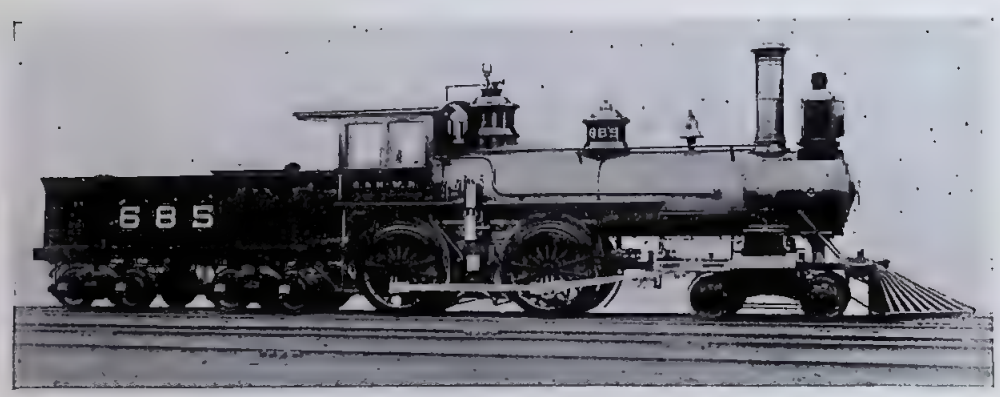
After the inside-connected 4-4-0 engine designed by G. S. Griggs went out of style, the B&P purchased engines from Rhode Island, Hinkley, Mason, and Taunton. The majority were Rhode Islands, but these were not alike, by any means. Rhode Island had a standard 4-4-0, built in various sizes, and of this design the B&P had some. A very different design is exemplified by the *William R. Robeson,* which suggests the Lehigh Valley more than the Boston & Providence. This engine, road number 2, was built by Rhode Island in 1881 with 18″ x 22″ cylinders, 66″ drivers, and weight of 91,850 pounds. It burned anthracite, which, of course, accounts for the design.

To this engine, the *Stoughton* presents an interesting contrast. The latter, numbered 62, was built by Hinkley in 1387 with 13″ x 24″ cylinders, 60″ drivers, and weight of 90,000 pounds. Certainly, there is no "family resemblance" by which this engine could be associated with the other.

Old-time enginemen use to talk about "cold-water Hinkleys," which was their way of saying that these engines did not steam. Be that as it may, the roads that had them did not buy many. A few roads had a moderate number, but in general orders were for only one or two.

Rhode Island did a wow of a business, getting orders for as many as 100 or more engines at a time from a single road. Orders for 10 or 20 were common. Some roads specified certain details, but many purchased "stock" engines which, being alike in every respect, were easy to maintain.

In the old days, the purchaser simply stated train load, grade, and curvature, and the builder took care of the details. Just like the old Kodak ads: "You press the button; we do the rest"!



C&NW McQueen of 1888. Later than the days of "The Old North Western" (page 8) was this McQueen engine built for the C&NW by Schenectady in 1888. No. 685 was of Class C-5 and had 18″ x 24″ cylinders, 63″ drivers, and weighed 95,300 pounds. This photo is from the collection of the late Arthur Curran of Newton Center, Mass.

J. W. Griffin, Upper Canada Railway Society, Toronto, Canada.

Pool Trains

THE Canadian National and the Canadian Pacific cooperate in their passenger-train services between Montreal-Toronto and Montreal-Quebec City so that instead of competitive trains on both roads, a better service is maintained by simply dividing the passenger earnings according to the competitive percentages which the roads had established before the combined service was started March 11, 1934. This is called a pool, and the through trains are listed on the timetables as "pool trains." Timetables of both roads list all trains of both roads, the locals which still are operating as CP or CN trains as well as the pool trains. Equipment and trackage are used to best advantage, and it is not surprising to see a green CN Hudson pulling a train of mixed green CN and tuscan red CP cars out of the CP's Windsor Station in Montreal, from which it may run some 10 miles on CP trains and then

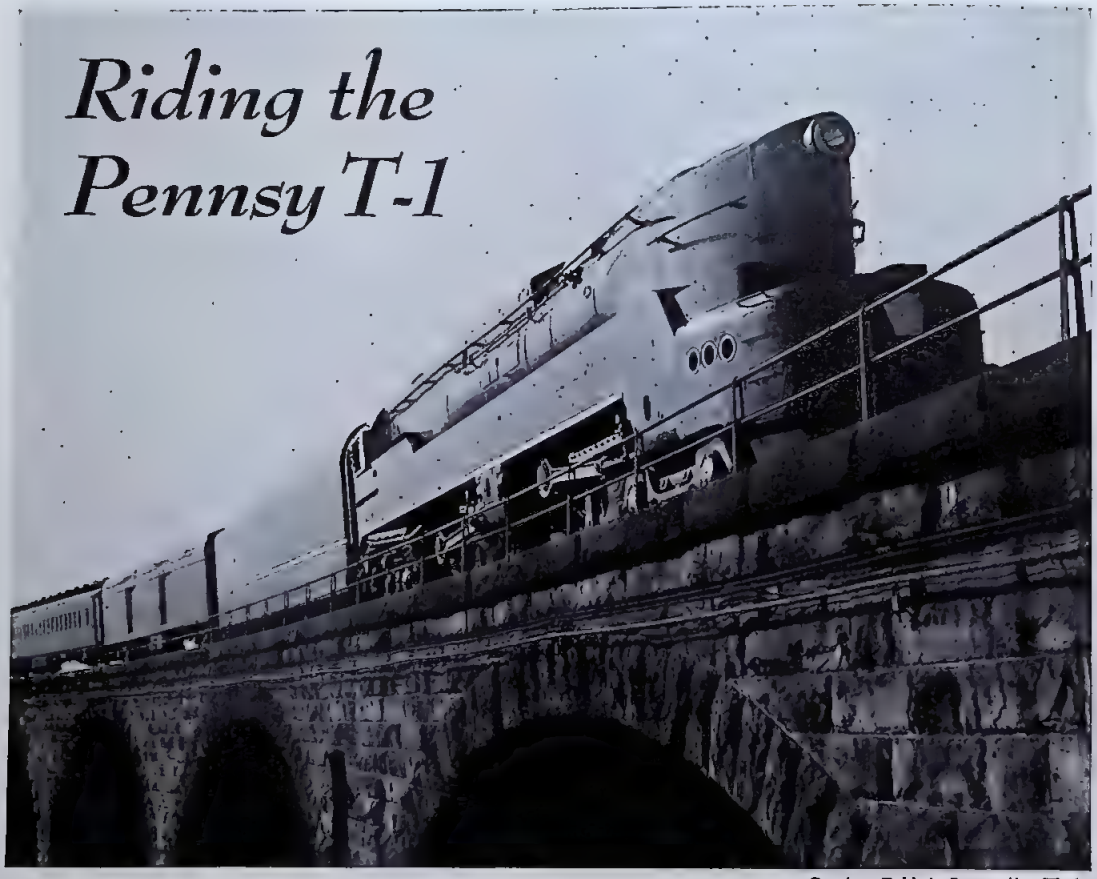
Railroad Photographs, 47 Royal St., Allston, Mass.; by H. W. Pontin

Behind a Canadian National Hudson locomotive the 3 p. m. pool train (left) for Toronto leaves Windsor (Canadian Pacific) Station, Montreal. At right is a pool train for Quebec City, leaving Windsor behind a CP streamlined Hudson.

use the National tracks to Toronto, where trains use the Union Station.

The earnings pool is an old idea successfully used back in the 1870's to relieve railroads of the ruinous rate competition of the time. But then it did not benefit the public, and was finally outlawed, at least as far as freight was concerned. Now the passenger-service pool works out to provide much better service, since it eliminates expensive duplicate trains, and is not only used in Canada between the cities mentioned, but also in the United States. A. B. Smith, onetime passenger traffic manager of the Northern Pacific, started the first successful modern pool (1925) with the UP and the GN between Portland and Seattle, and this encouraged him later to arrange pool service with the Soo Line and the Great Northern between Duluth and the Twin Cities. These tri-partite pools are still in effect.

Riding the Pennsy T-1



Courtesy Baldwin Locomotive Works.

★ A trip in the cab of new 4-4-4-4 locomotive.

*By Russ Davis.**

THE timetable is quite matter-of-fact about Pennsylvania train No. 72, the one called the *Juniata*. Suppose you want to catch it east from Pittsburgh to Harrisburg. The timetable will tell you in lightface type that the *Juniata* leaves Pittsburgh at 9:45 a.m. and arrives at Harrisburg five hours later. It lists stops at East Liberty, Johnstown, Altoona, and Lewistown. That's the sort of information the average passenger seeks in his schedule card: what time his train leaves and what time it arrives.

Then delve behind the figures into the realm of men and machines. There's a story lurking there you won't find in the timetable. It's about crews and equipment, about movement and right of way, cab signals, fuel, water, the weather and the hundred and one other angles that go to make up the operation of a train over track. But specifically, it's the story about the new T-1 engines, because the *Juniata's* power, several times a week at least, is furnished by one of the two new giants—land battleships, or dreadnaughts, they call them.

Don't turn the dial, as your favorite radio announcer often says, because we're going to take a ride on one of the big boys. But before that, let's recap just a bit on the T-1. There are two of them, bearing road numbers 6110 and 6111. Both went into action in the Summer of 1942 and were designed to render, over steam lines, the same service given in the East by the GG-1 electrics.

The T-1 is of the 4-4-4-4 type, a four-wheeled leading truck, four pairs of drivers and a four-wheeled trailing truck. In all, it's a rugged customer any way you look at it, because it tips the scale at nearly a million pounds when loaded with 41 tons of coal and 19,500 gallons of water. Its tractive force is 65,000 pounds,

* Courtesy *The Mutual Magazine*, Pennsylvania RR.

plus 13,500 for the booster on 6111. The driving wheelbase is 25 feet 5 inches, and the total engine and tender wheelbase is 107 feet.

Their debut in railroad service followed four years of engineering effort. The order for these locomotives went to the Baldwin Locomotive Works in July, 1940, long before Pearl Harbor, and it wasn't until April and May, 1942, that they were delivered. Specifications included these points: that they have sufficient power to haul 880 tons at 100 miles an hour, and that they be able to make the 713-mile Chicago-to-Harrisburg run with only one stop for fuel.

On the trip to Pittsburgh to catch the T-1, we had a look at the freight moving over the line. That look gave a vivid picture of the part this great railroad is playing in winning the war.

It wasn't unusual to discover the westbound *Duquesne* suddenly sandwiched between two fast-rolling eastbound freights loaded with the sinews of war. Freight train followed freight train at short intervals, helper engines panted on loop tracks after helping shove loaded cars over a grade, and still they came—trains laden with the goods of peace and war, trains along the main line and trains on sidings, trains easing in over branch lines, trains loaded with oil for the armed forces overseas, oil for the industry and homes of the East—the Pennsylvania Railroad's answer to a harried Hitler's submarine war on tankers.

A fellow passenger watched those long strings of loaded oil cars and talked about the railroads' success in the movement of the land tankers.

"Right in der fuehrer's face," he spluttered gleefully as one exceptionally long train whipped by, its caboose a red blur against the coach window before it was gone and the whoof, whoof, whoof of the passing tank cars was stilled.

And the realization grew then as the afternoon wore on, and the never-ending procession of freight cars paraded past the window, that here was a mighty railroad at work. This was not a glowing editorial from one of the many metropolitan newspapers of the land, an editorial praising the movement of goods over the steel ribbons, but this was the real thing; here it was, a railroad before our eyes moving those vital supplies. And, translated from an editorial into something we could see and feel, it made a tremendous sight, an awe-inspiring page in the history of railroading during war time. Wherever we looked along the line, we found the line was busy. We wondered where all the engines were coming from. Finally, as there seemed no sign of a let-up, we didn't try to figure it further and let it go with mixed feelings of pride and bewilderment . . . pride in the great job our railroads are doing, and bewilderment at how it can be done on such a clocklike schedule.

But that's off on a bit of a tangent. This is about a ride in the cab of a T-1. Outfitted in coveralls and caps, we place ourselves in tow of Albert J. Johnston, station master at Pittsburgh.

"Tie up your pants legs so you won't catch the cuffs on anything and trip," Johnston says.

Walking along the station platform to the head end, we talk with K. L. Roberts, assistant

Almost ready to leave.

From left to right at the side of 6111 are: Harry Bowers, special engineman; O. W. Kirsch, assistant trainmaster; Albert J. Johnston, station master; John Ashcroft, fireman on the new locomotive; and H. P. Wian, engineer on the first leg of the trip.

Courtesy *The Mutual Magazine.*

Courtesy *The Mutual Magazine.*

Ready to leave Pittsburgh.

No. 6111 at the head end of the *Juniata.* Engineman Wian is at the window with Fireman Ashcroft and author Russ Davis in the doorway. Notice Davis' tied overalls legs. On opposite page, the 6111 just after coupling on.

road foreman of engines. He agrees that the T-1 locomotives are playing their part in the war effort and sums up his conclusions about them like this:

"They've been doing all right," he says. "There's no question about it, the T-1 is a long-life locomotive."

There is some shifting before the *Juniata* is ready to move. The train known as the *Golden Triangle,* from Chicago to Pittsburgh, had left the Illinois metropolis at 11:15 the night before. Some of the sleepers are dropped at Pittsburgh while other cars are added and the *Golden Triangle* becomes the *Juniata* for Harrisburg, Philadelphia and New York.

Off in the yards toward 28th Street, where the engines are made ready, a huge black shape swings carefully over the network of switches and crossovers. The great tender seems to dwarf the other locomotives as it backs along the track. It's No. 6111 with H. P. Wian at the throttle. His fireman is John Ashcroft. Wian eases the monster up to the string of 15 cars and couples on with the skill that comes only of long practice at the throttle . . . practice that dates back to 1918. A photographer gets a shot of the coupling-up.

"Boy," he says with a grin, "I should take this picture in sections. What I need to get that baby with is a panorama camera."

Engineman Wian makes his last checkup, and it's "All aboard."

"Look out you don't hurt yourself getting up there," Johnston warns.

It's a long way to the top, make no mistake about that. Then we are on the cab platform and turn around to see how far it is to the ground. It's quite a distance. Roberts and Ashcroft examine the fire that stirs up vague wonderings about Dante's Inferno. The hot coals glow white and the heat pours through the doors and glows inside the cab. To any person who has been nursing an oil burner on the East Coast during the Winter, that roaring fire would bring a mellow sense of comfort and good cheer.

The T-1 is a mighty powerful bit of machinery—and, to the novice, complicated. Valves and gauges, meters and pipes, and just plain everyday gadgets seem to sprout from all parts of the boiler. Steam sizzles and the crew members shout to each other above the din. Short whistle blasts sound in the cab as Conductor Wesley Nancarrow, far back in the train, gives the order to proceed. John Ashcroft steps up the pressure that controls the automatic stoker; Engineman Wian makes a swift checkup of his instruments and reaches for the throttle with both hands.

Underneath, the big drivers slowly make their first turn. Almost tenderly, Wian inches the throttle open and the big engine, like a sleeping ogre coming to life and still a bit dazed by it all, trembles and then bears down. The over-all rumbling increases to a steady thump, thump, thump. There is a roaring from the exhaust that sounds like the interior of a volcano, troubled for the moment with a slight gastric disturbance, and No. 6111 is on its way.

Assistant Road Foreman Roberts anticipates

a thought that is one of the first to occur to a stranger making his initial ride in a T-1. He motions to an auxiliary seat back of the fireman and sets it up.

"Sit here for awhile until you get used to it," he shouts above the din.

The *Juniata* picks its way through the web of yard tracks and gathers speed. The coal dock and countless standing locomotives at 28th Street flash past on the fireman's side of the cab. No. 6111 is filling the air with sound, but we realize it hasn't been given its head because there will be a stop in a few minutes at East Liberty Station. That fills the mind with thoughts about speed. This big animal can do a fast lap on the track, they have told us, and unconsciously I reach out to grasp an iron handrail back of the fireman's seat. It's a comfort to hang on to that, as it seems sturdy enough to hold my 165 pounds, come what may.

The old story comes to mind about the Englishman and the American. They were, it seems, comparing the speeds of locomotives in their respective lands.

"Really," the Englishman said, "really, old chap, our locomotives are positively ripping, don't you know. Why, only the other day I was on one of our trains and we were going so fast that, would you believe it, the telephone poles looked like a picket fence."

The Yankee chewed the end of a black cigar.

"That's nothing at all," he said. "Now get this. I was on one of our fast trains and we were out in the country. First we passed a field of peas, then some carrots, potatoes, corn, and onions. Then we whizzed by a small pond." He paused and chewed again on his cigar. "Look," he said, "we were going so fast that all that stuff ran together and looked like vegetable soup."

Well, we haven't seen any vegetable soup as 6111 thunders along . . . but we haven't passed a pond yet, either.

Eleven minutes after leaving the Pennsylvania Station, the *Juniata* coasts into East Liberty. Roberts takes over when the conductor's signal sounds in the cab and once more the steady thumping begins as 6111 starts out for more than a hour and a quarter of steady running to the next stop, Johnstown. Cinders and coal dust swirl around the cab as 6111 and the *Juniata* pick up speed. Roberts is giving his charge more leeway now and the landscape unreels past the doors and open window.

Engineman Wian takes a hose from a hideaway in the cab floor and sprays the coal, the deck, and the platforms under the seats for the engineman and fireman. He will do that several times during the course of the trip.

The sound of the engine has now become a rhythmic reverberation. Miss 6111 (and it's still a mystery why railroadmen more often than not refer to these giants as *she* and *her*) pokes

Courtesy *The Mutual Magazine.*

Vanishing glory.

The London & North Eastern Railway has decided not to issue silk hats to stationmasters entitled to wear them when the existing hats no longer are presentable. Then it is to be a case of bowlers for all. That will take the shine off m'luds of the rail and make it more difficult for the spectator to determine who is the lion of the occasion when a distinguished visitor arrives by train and is received with honor. For close on a century, silk has been worn by the masters at nine LNER stations, including Newcastle, and perhaps that is long enough. Many of the public, however, will regret the sacrifice of sartorial splendor — the frock coat must go too, for one cannot wear a bowler with that—to the demands of Demos.—Newcastle *Journal.*

her nose into a curve and there is surprisingly little lateral shifting as the train takes it in stride.

Other stations flash by as the *Juniata,* really go-deviling it now, roars and whips its way over the rails. We have passed Wilkinsburg, Braddock, East Pittsburgh, Wilmerding, the Pitcairn Yards, and are now approaching Irwin. Confidence grows as we pass Manor and we find ourselves getting used to the motion of the cab. So I stand up, first planting my feet firmly, and still holding on, and look forward over the fireman's shoulder through the window up ahead. There's a freight train away up there on the long straight stretch of steel highway, and 6111 gobbles up the distance in a hurry.

Then the freight's caboose appears over Roberts' shoulder and the entire train slips past, each car's appearance punctuated by a swishing rush of air, until the M-1, huge in its own right, runs cab to cab with 6111 for an instant before the *Juniata* sprints ahead and leaves the other engine biting off great, gasping chuff-chuff-chuffs as it recedes quickly in the distance.

That the 6111 is undoubtedly unusual shapes up when you notice the reactions of persons along the right of way. Housewives hanging up the Monday washing, older men hoeing down a small garden patch, students on their way to school—all stop to watch this big locomotive go whirling, swirling past. These people, most of them, live right along the right of way. They are used to trains. Locomotives to them over a period of years of close acquaintance are a dime a dozen and they don't bother to look up as the ordinary train rushes along. But it's different with 6111 and the other streamliner with the nautical prow, 6110. When those Gargantuas of the line roar along, the folks at the side of the steel trail stop in their domestic chores to watch. The streamliner attracts their attention and, fascinated, they gaze after until it has flashed from their view.

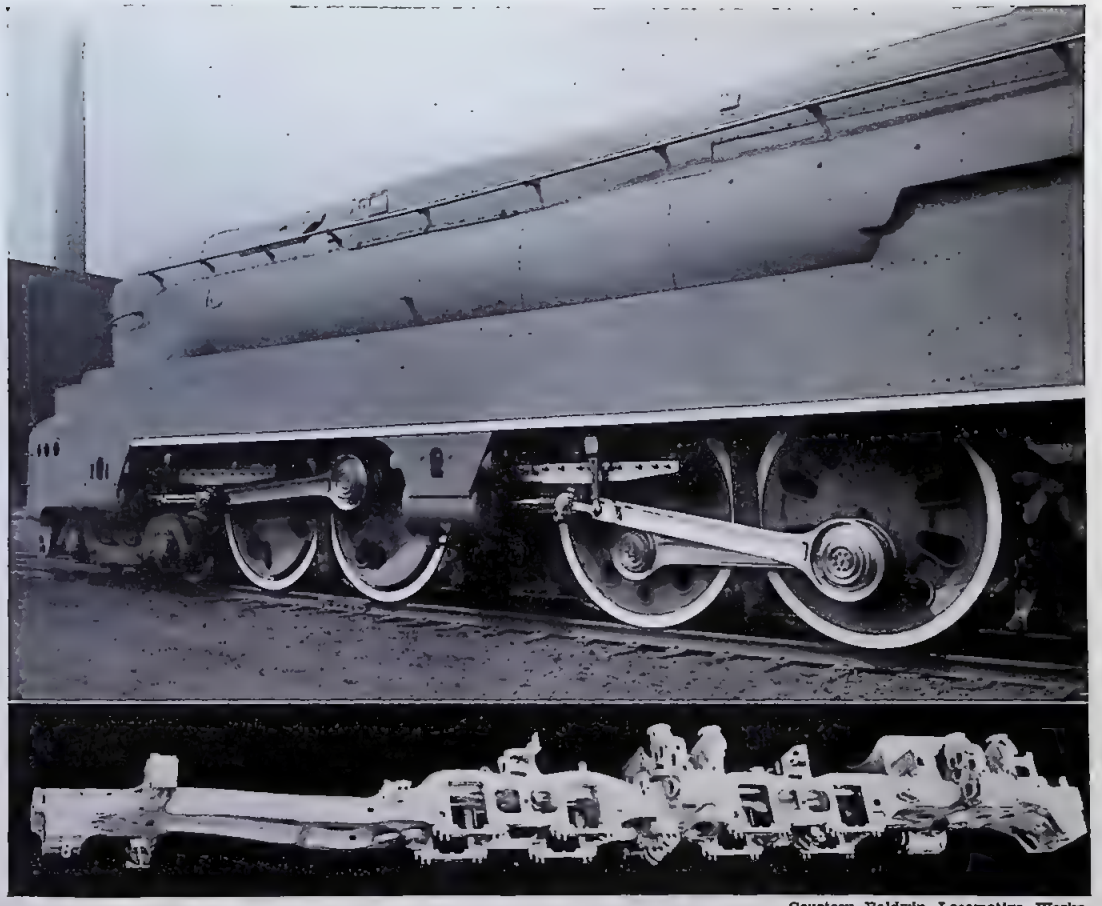
Others stop to watch this peer among locomotives . . . section crews step to the side of the roadbed to see it, kids race to get a good view, engine crews lean from cab doors and windows as 6111 steams and rockets regally down the line, and even hoboes pause while cooking a midmorning batch of mulligan stew in their jungle retreat to watch after this tremendous power plant on wheels.

The world along the railroad is made up of many types, but all seem keenly interested, this early Spring morning, in 6111.

Jeannette and Greenburg have been passed and we near Latrobe. There's a shouted conversation in the cab with all three railroaders taking part, and then the scoop goes down and thousands of gallons of water are forced from the track pan into the tender. The running speed is reduced for this operation until Ashcroft signals across the cab with his hand that the scoop is once more in place, and the pace and tempo are again on the increase.

The *Juniata,* its locomotive air-horn constantly blaring a warning, swings through Derry and Torrance, the stations suddenly appearing and as suddenly disappearing, and then follows the Conemaugh River for about half an hour. Johnstown is in the distance, the river there heavily diked on each side with walls of cement. Roberts eases the big engine down and the train coasts into the station for a short pause.

Again it's away and on to one of the most thrilling parts of the entire journey. Past Cresson the *Juniata* flashes and toward a point near Gallitzin, where the eastbound tracks swing wide to the right while the westbound rails veer off in the other direction. Directly ahead is the portal to Gallitzin Tunnel, and 6111 enters after passing several helper engines on a loop track near the tunnel entrance. It's dark in the



Courtesy Baldwin Locomotive Works.

The T-1 is not articulated.

Although the wheel arrangement is that of an articulated locomotive, the T-1 has a rigid wheelbase and rigid frame, a one-piece bed of nickel steel with the four cylinders, back cylinder heads, cross-braces, and various brackets and attachments cast integral.

tunnel, but the electric lights in the cab illuminate the gauges and panels and cast a slight glow.

Daylight appears ahead and we are out in the open again, running easily under reduced speed toward the famous Horseshoe Curve. On the engineer's side is a deep gorge, well back from the right of way, and far across is another range of hills. Engineman Wian has taken over at the throttle and Roberts motions us to the right side of the cab to get a better look. The *Juniata* loafs gently into the curve. A long freight train is on its way west and its locomotive huffs and chuffs alongside. Peering ahead, we see the rest of the freight cars in a semicircle around the arc. Its helper is a bit below our level, sending columns of smoke straight up from the stack. The big 6111 veers to the left as it reaches the heel of the curve, flows around to the toe, and heads straight down toward Altoona.

The helper on the freight pauses. We look back and watch the black smoke rising high beyond the hill, around which the head engine has already disappeared. Another helper, this one eastbound, swings into our range of vision. It's moving light, and carefully follows in the wake of the *Juniata*. Engine 6111's train curves along behind and we know the passengers in the rear cars are getting their first real look at the giant locomotive on the head end. Down below to the right is the Altoona waterworks reservoir, glittering and glistening in the noonday sun. It's a spectacle we won't soon forget, but we wish it were Summer so the trees and countryside would be green with foliage. It's only a few minutes then before Altoona is at hand, the third stop of the day.

Railroad Photographs, 47 Royal St., Allston, Mass.; by H. W. Pontin.

Horseshoe Curve.

As 6111 rounds the famous curve about Burgoon's Run, passengers in the rear cars of the *Juniata* get their first real look at the giant locomotive.

A new crew takes over. H. S. Weber, in the railroad's employ since 1905 and in passenger service since 1918, is engineman. His fireman is H. W. Irvin, and Harvey Smires, assistant road foreman of engines, Middle Division, is there, too.

"This is my second war on the railroad," Engineman Weber declares. He adds: "I've only had this engine twice before, but she sure is a good one when you get used to her."

The crew looks around the cab in the scheduled four-minute stop at the station. While the mail and baggage are being loaded from wagons to train, and vice versa, the crew members, like strict housekeepers, grumble a bit, although good naturedly, about how the coal dust has collected on the floor. Fireman Irvin gets out a broom and sweeps the deck before turning more water on the coal and flooring. Assistant Road Foreman Smires elects to take the throttle as far as Lewistown, about an hour and a quarter away. They have exchanged notes with the men from Pittsburgh and the opinion of all is that No. 6111 is performing in her usual capable style. But Irvin, Weber and Smires want to make certain. They look at the fire box and Irvin smooths over the glowing coals with a long-handled iron rake. Valves and gauges are given a brief, but thorough, inspection, and instrument dials are noted. The conductor's signal sounds in the cab.

The smoke from the stack sends a dancing, shadowy pattern along the ground at the side of the track as 6111 picks up momentum. At the left are the shops for which Altoona is famous. Workers at their lunch hour look up at the streamliner and Irvin waves to many. The always-busy shops at Altoona are busier than ever now because of the war. The long brick buildings stretch for blocks, and in the enclosures stand rows of passenger and freight cars undergoing repairs and adjustments.

They fade quickly into the distance because Harvey Smires is at the controls, and he, with an inviting straight track ahead, is cutting loose. Then for the first time we gain the impression of greater speed as 6111 roars along the line. Smires is strictly of the steam-whistle school. Ignoring the air horn, he reaches eagerly for the pull cord and for the first time we hear the full-throated scream of the whistle, which seems more in keeping with the size of the iron monster. The two long blasts, followed by a short and a medium, broadcast their message of warning to automobile traffic.

Later, Harvey Smires explains that the Middle Division has longer straightaways than those of the Pittsburgh Division, which accounts for the apparent increase in speed.

"How fast were we going at tops?"

"About 75," Smires says. He explains about the speed limits on various curves.

As we flash through Tyrone and into open country again, a warning note sounds suddenly and the miniature cab-signal lights show caution for the next block. The speed is cut and both Irvin and Smires call out the signals until they agree again on "clear" and the former pace is resumed.

It's hard to realize, as I stand there enjoying a thrill I'll perhaps recount some day to my grandchildren, that for some folks this engine ride is all in the day's work. Look. Here's a boyhood dream come true! It's an ambition realized that adults openly confess to . . . a ride in the cab of an engine. And what an engine this one is, great driving power unleashed to haul hundreds of tons, a veritable Goliath among locomotives, a power plant that's doing its share to ship the Axis.

Those thoughts all rush pell-mell through my mind in the din and roar of the cab, and I get all excited about it and wonder if I can ever get those impressions down in the black type that prints on paper. And then I look at Harvey Smires, Engineman Weber, Fireman Irvin, and realize that to them this is old stuff. They ride these cabs week in and week out. It's their job, their living, and maybe the thrill is gone—maybe not—but they seem outwardly casual about the whole thing. And I wonder about that a little and try to put things in their proper perspective. Then Engineman Weber comes over and wants to know if we can send him a magazine with the writeup in it. Sure we can, but we wonder how he is going to get much out of a prosaic story about this engine ride when he has that living experience himself every day or so.

Irvin steps down from his seat as Huntingdon is lost in the distance and motions for me to climb up.

"You watch the stoker," he says. He grins slyly when he says it and I know darn well he is going to be right there watching it himself. But the idea makes me feel important, as though we belong to this experience, as though now we are helping rather than just hanging around like an ornament looking on. So I watch the needle on the stoker gauge and it stays right there between 25 and 50 where it belongs.

I rest my arm on the pad along the window sill. That gives a still better look ahead at the forepart of the engine. The front of that boiler is a long way forward. In fact, it seems so long I wonder if the prow isn't somewhere up on the next division. A curve looms up and I get a feeling of elation as 6111 takes it smoothly.

Then the *Juniata* meets the Juniata above Lewistown, and train and river of the same name will follow along together the last 60-odd miles almost to Harrisburg. Engineman Weber is at the controls and I step down from the fireman's place and compare notes with Assistant Road Foreman Smires. At last the Susquehanna appears and 6111 eases across the long stone-arch bridge and canters through the last mile or two until it slides underneath the station canopy at Harrisburg.

"Schedule time from Altoona to here is 2 hours 24 minutes," Smires says. "We made it in 2:21." He smiles with the true railroader's joy of being on time, with a margin to spare.

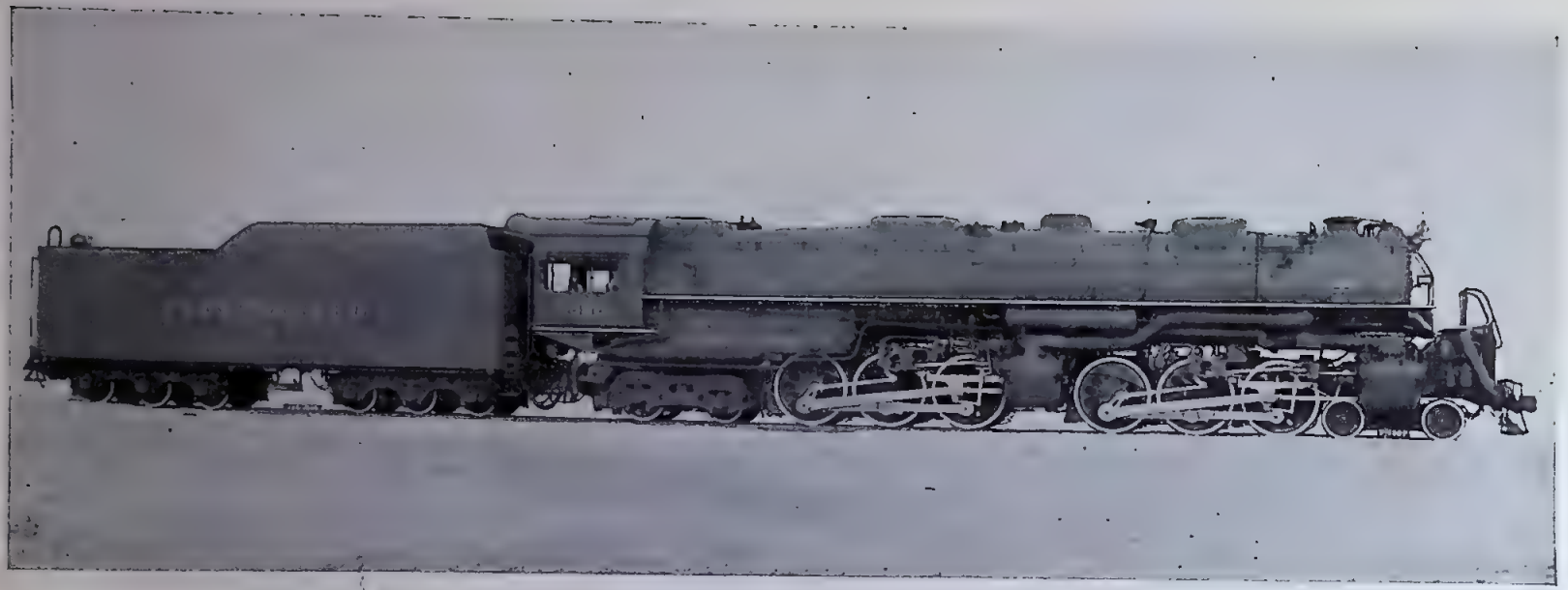
They uncouple 6111 and we watch as she moves majestically away, smoke billowing from her stack, her exhaust giving off a proud, thundering roar. Then a GG-1 electric glides in and it couples to the *Juniata* . . . steam has given way to electricity.

We accompany Smires to a washroom where soap and water are to be found in quantities. On the way, our appearance is aptly indicated by a Pullman porter standing idle in the vestibule of his car. He watches us come down the wooden walk. Then he speaks and we immediately get the point.

"Amos and Andy," he says.

First train order by wire.

Charles Minot, superintendent of the Erie Railroad in 1851, is credited with having sent the first telegraphed train order, according to the Association of American Railroads. One of the earliest telegraph lines built for commercial use closely followed the Erie across New York State. On September 22, 1851, Minot was riding on a westbound train which drew into a siding at Harriman (then Turner), N. Y., to allow an eastbound train to pass. But the eastbound train was late. Minot, impatient at the delay, availed himself of the telegraph service to locate the missing train. On learning that it had not arrived at Goshen, 13 miles to the west, he sent a telegram ordering that it be held there, then ordered his own train to proceed to Goshen. The engineer is said to have refused to take such a risk, whereupon Minot climbed into the cab himself and took the train to Goshen, where the meet was made successfully and safely. Thus began a new era in railroading.



Clinchfield 4-6-6-4

Built 1943 by American Locomotive Company.

SEVEN years ago the engineers of Union Pacific and the American Locomotive Company joined in designing, upon the mechanical framework originated by that remarkable Frenchman Anatole Mallet, a high-speed simple articulated locomotive of high power and considerable flexibility. Where the compound Mallets had been slow drag-freight or pusher engines, this new type was suitable for pulling the UP's 20-car Pullman expresses across the Western plains. Of 4-6-6-4 wheel arrangement, the new locos were dubbed "Challengers," and that name has stuck with the type. Latest to buy Challenger type locomotives, which have proved equally suited for fast freight or heavy passenger service, is the Clinchfield, the L&N-ACL affiliate which cuts from eastern Kentucky southeastward across the very heart of the Allegheny and Blue Ridge mountains to Spartanburg, S. C. Clinchfield traffic is more than half soft coal. Six of the eight new 4-6-6-4's replace 16 Mikados. They operate under a speed limit of 45 miles per hour and around 14-degree curves.

Specifications:

Tractive force	101,120 lbs.
Cylinders, diameter and stroke	22" x 32"
Drivers, diameter	69"
Weight on drivers	420,000 lbs.
Weight on front truck	79,000 lbs.
Weight on trailing truck	108,000 lbs.
Total weight of engine	607,000 lbs.
Total weight of engine and tender	923,900 lbs.
Steam pressure	265 lbs.
Grate area	108 sq. ft.
Heating surface (evaporative)	5392 sq. ft.

The Sardine that went to Africa

"I stooped over in the middle of the (censored) desert and picked up the can with your New England wrapper on it while en route to another escapade through which I have successfully defended my life," writes Sgt. W. H. York of the U. S. Air Corps to a Maine packer, "and I can truthfully say it was the biggest surprise of the war as far as I am personally concerned. I knew you had a wide distribution of your sardines but I never thought you got them over here in the desert in the Middle East."

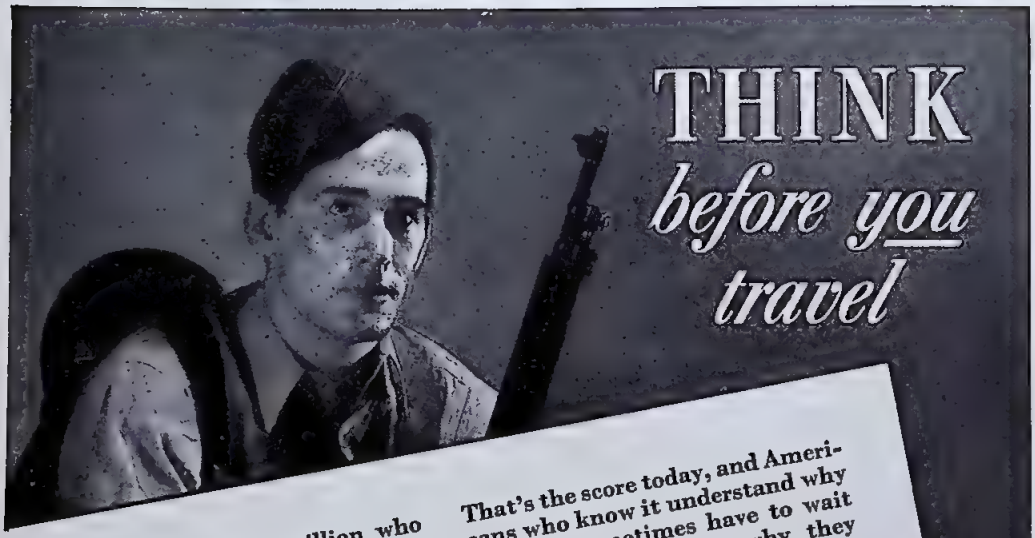
The Sergeant would be further surprised if he could peek into the long lines of freight cars which the Boston and Maine is taking away from busy Northern New England factories and farms these days. He'd learn the address tags on a lot of food grown and packed here no longer read "The Corner Grocery in America," but "en route to our fighting forces." He'd learn, too, that Northern New England's busy factories are turning out a thousand and one vital materials now being used in foreign lands to fight the enemies of freedom.

Next time you feel irritated over rationing of canned goods, gasoline, tires, food or other war essentials, remember Sergeant York and his thousands of fellow Americans (perhaps your next-door neighbor's boy) fighting throughout the world. Next time your train is late or you can't get just the reservation you want, stop and think what is behind these petty inconveniences. We railroad men know.

Next time you are asked to serve on a Civilian Defense job remember these are days when every one of us, men and women alike, must do our part. Next time you fret about taxes be thankful you live in a country where you can still work where you please and earn enough to pay your share of the fight for freedom. Next time you start to buy some purely selfish things, think twice and buy War Bonds or War Stamps instead.

BOSTON & MAINE RAILROAD

ONE OF AMERICA'S RAILROADS — ALL UNITED FOR VICTORY



THINK *before you travel*

HE is one in two million who every month board American railroad trains under military orders to ride away on sombre, terrible, necessary business—the business of America's salvation—the business of war.

To move these two million men each month in special cars and trains takes more than one-half of all the sleeping cars and one-third of all the coaches in the United States.

With what equipment is left the railroads must move individual servicemen or smaller groups traveling under orders—soldiers, sailors, marines and coast guards on furlough—families visiting servicemen in camps—businessmen and other workers on war business—those who can no longer use their automobiles—and every other sort of traveler by rail.

In all, the railroads today carry *nearly four times the passenger traffic of 1939.*

That's the score today, and Americans who know it understand why travelers sometimes have to wait at ticket windows or why they cannot always get accommodations when they want them.

Whether you travel this summer—and where—and when, are questions which you alone can answer—but answer them with your eyes fixed on the fighting fronts and with the needs of the armed forces in your mind.

When your trip is necessary, you can help by asking the railroad ticket agents about the less crowded days and trains on which to travel. You can help by traveling "light" and by canceling reservations promptly if your plans are changed.

The American railroads and railroad men will continue to do their utmost to get through the heavy movements indispensable to winning the war.

AMERICAN RAILROADS

ASSOCIATION OF

ALL UNITED FOR VICTORY

RAILROAD MONEY

☆ **Railroads were made and fortunes lost with pictorial currency of wood-burner era.**

By William J. McChesney.

A "DOLLAR BILL" was seldom worth a dollar back in the wood-burner days. If it had a train engraved on it the holder might receive 60 cents' worth of corn meal; if it did not, it might buy only 50 cents' worth. A conductor, who was of necessity also a banker in the 1850's, might let you ride twice as far if he was sufficiently impressed by your money.

In many states during this period almost anyone could issue paper money. Not until 1862 did the federal government take steps to control currency. A silver or gold dollar was always worth a dollar in exchange for merchandise. A paper dollar was worth whatever you could get for it. If the railroad, insurance company or bank which issued the paper money would give you a gold dollar for two of its paper dollars, it was said to be at 50 per cent discount. Thus it was possible for any issuing "banker" to control the true value of his paper money—that is, as long as he had gold or silver with which to redeem it when called upon.

Commercial dealings were usually in paper money because coins were hoarded and very scarce. Varying discounts on paper money made all transactions more or less a speculation. Your

Above: The Mississippi Central offered to "pay to the bearer two dollars in current Bank or Confederate States notes when the sum of five dollars is presented." Dated January 1, 1862.

Back of a $2 note of the Brunswick & Albany Railroad Company. This series of notes was in two colors, finely engraved on good paper.

One of the few railroad notes which claimed to be redeemable in United States currency. The currency referred to was first issued in 1862.

Adrian Insurance Company dollar bills might be worth 25 cents each in gold when you asked for a ticket to Trout Brook. If the fare was a dollar (in gold) the agent would take four of those paper dollars or you could walk the tracks.

If current-day common stocks were circulated as money it would be similar to but far safer than the condition which prevailed before the National Bank Act of 1862.

Money conditions grew progressively worse until passage of the act, and until federal taxes on private note issues effectively halted the era of so-called "Red Dog Money." Conductors buying and selling these bank notes all day at varying discounts must have burned a lot of whale oil at the end of their runs when accounting for receipts. It was necessary for them to exercise great care in transactions, as notes were commonly discounted at 50 per cent of face value. In order to feel assured that a note was good, a "bank-note detector" was used. This was a catalog of notes and what they were worth. Due to rapid changes in values it was impossible to keep up with the information. Sumner, in his *History of Banking,* says:

> It is difficult to realize that there were hundreds of banks whose notes circulated in any given community. The bank notes were bits of paper recognizable by shape, color, size, and engraved work. Any piece of paper which had these came within the prestige of money. The person to whom one of them was offered, if unskilled in banking, had little choice but to take it. A merchant turned to his 'detector.' He scrutinized the worn and dirty scrap for two or three minutes, regarding it as more probably "good" if it were worn and dirty than if it were clean, because those features were proof of long and successful circulation. He turned it up to the light and looked through it, because it was the custom of banks to file the notes on slender pins which made holes through them. If there were many such holes the note had been often in banks and its genuineness was ratified.

This authority does not state whether it was the practice to "age" bank notes and prick a few small holes in them before bargaining for a ticket to Ocamulgee.

The predominance of railroad and other paper money having attractive engravings of railroad subjects is accounted for by the vast public interest in railroads during this period of history. Railroads dominated the life of every thriving community. If a town was bypassed by the railroad it was destined for oblivion. Bankers knew it. They also knew their money had to "look good" to circulate. A train on their colorful engraved notes was calculated to impress people who would be asked to accept it in payment. Whether or not the banker's town had a railroad when the money was printed was not a factor. Railroads were a-building, and every crackerbarrel convention and hot-stove committee was confident of its negotiations to bring the tracks down Main Street. This sudden expansion of railroads is apparent from the following table of mileage in the United States:

Year	Operating Mileage
1850	9,021
1854	16,720
1857	24,503
1860	30,635

In the three years from 1854 to 1857 approximately 300 million dollars of railroad securities were issued. This is not an impressive figure today, but at that time it was four times the total national debt.

Banks in the United States and England invested depositors' money in American railroad bonds and stocks. Failures were frequent and widespread. In 1857 practically all banks in the United States failed when their investments, largely in railroads, were revalued because of a panic to convert paper into gold or silver.

These repeated failures did not halt the urgent construction of railroads, nor discourage the lusty speculation in their securities. The vivid and dramatic arrival of the first train in any town was a stirring and breath-taking event, and a great day for the bankers. Brilliant color, whistles and bells, a cloud of steam and the smell of pine pitch burning, combined with talk of death-taking speed, kept even vigorous opponents too close to the train for their own bodily safety. People seemed to buy a railroad's securities and accept its bank notes as much for the sheer respect and admiration of the virile monster as for the promised income from the investment. Fortunes lost in June were being recovered in December, at least in paper money.

In this period of bold expansion all talk and action seemed to concern future progress and new frontiers. The names of conservatives of this chapter of American history are lost. Today in retrospect we read rather of Baldwin, Norris, Huntington, Casement, Mason, Judah, and others equally well known who pushed the ever-lengthening rails past the roar of construction camps to complete a web of transcontinental transportation. When these pioneers traveled they probably carried a roll of Red Dog Money in one pocket and gold and silver coins in another. If they could not make satisfactory terms with the paper money the coins would surely be accepted.

All photos by John W. Beach, 3 Edgemont Ave., Summit, N. J.

Souvenirs of the railroad-money era.

The Man in the Tower

By Edward Hungerford.

IT IS well-nigh time that we Americans began to give a little thought to the magnificent job that is being done by our railroads toward the winning of the war. The man in the engine cab or the gangling youth who is making his unsteady way over the top of swiftly moving freight cars or swinging his coupling stick in a sadly overworked yard in the dead of a Winter's night may not be as glamorous a figure as the lad in khaki or in blue, but he is not less earnest, not less hardworking. Laboring in a northern railroad yard in the teeth of a Winter's blizzard is not much easier than standing on the deck of a tossing, rain-swept sub destroyer or grinding it out on the burning sands of North Africa. It is a war job just the same. If the freight cars are not loaded to their utmost, and if they are not kept moving to the ports, the ships that go across the broad oceans will go partially unloaded, and that will spell more than tragedy—bleak disaster. Blood, sweat and tears are by no means confined to the battlefield, whether that battlefield be on land, on sea, or high in the air. Even the elderly dispatcher and the towerman, called back to duty in war time, sitting at their desks, working almost untold hours overtime, are soldiers in the war. They have full cause to know its problems.

At the end of April of the present year, the Office of War Information, acting in connection with the Office of Defense Transportation, issued an extended report showing some of the things that transport of every sort was doing in this war. It is an impressive record, particularly so in connection with freight transport on the rails, even though the movement of troops on passenger trains has been no slouch of a performance.

Hardly had the war really begun overseas before the American railroad had rolled up its sleeves and gone to its man-sized task, in a man-sized war, like a man. Munitions for shipment overseas were beginning to come out of the nation's workshops in steadily increasing quantities. It was the railroad's job to bring them to the ports for shipment. The movement of troops already had begun. The army and the navy had entered into programs of vast expansion and everywhere across the land men and munitions were being gathered together.

PEARL HARBOR greatly intensified this situation. Then it was that the American railroad really went to work as it had never before had to work. It came to the fullest test of its efficiency both in men and machines. The already established close liaison between the railroads through their central organization in Washington—the Association of American Railroads—and the war and navy departments, was enlarged. Civilian use of the roads began to be cut radically. Passenger trains were removed, and dining, parlor and sleeping-car services throughout the land were greatly curtailed. There even were hints that passenger traffic might have to be rationed.

The American public took the hint and there was no rationing. With the exception of the district immediately roundabout the national capital, and the South and West, where the majority of the training camps and military centers are located, there is, during most hours of the day, most days of the week, no shortage of seats on the passenger trains, even though services have been curtailed. . . . Perhaps, because they see this for themselves, a good many folk continue to ride the trains, but riding seems to stay within the limits set by the roads themselves. They also have an eye upon their passenger revenues. . . . Of course, there is a deal of discomfort to those who still insist, for one reason or another, in patronizing the trains that remain. It is not easy this year for tourists to go to Florida or to Southern California. Frequently, they have to wait a long time for sleeping-car accommodations or for meals in the dining cars, perhaps go entirely without either; not infrequently they have to stand for long distances in the aisles of the coaches.

But there is little or no complaint. Most Americans realize that the discomforts they are undergoing are slight as compared with those of the folk of war-swept Europe. And they know that troop movement necessitates an increasing use of passenger equipment. Ofttimes, some of the finest and fastest trains in the land are held up for hours to let the troop trains take precedence over them, go sweeping their way to their far-off destinations—military camps or embarkation points. Still there is no grumbling.

This condition has continued to grow. In April of the present year the Office of War Information reported that about 1,750,000 troops a month—something over 50,000 men a day, together with their accouterments—were riding on the trains. This was exclusive of furlough travel. To handle this troop traffic, about half of the nation's supply of sleeping cars (3000 cars) are being used . . . plus 17 per cent of all the day coaches (another 3000 cars). During overnight runs the soldiers ride in Pullmans, 39 men to a car, one man in each upper berth and two in each lower. About 150 old sleepers have been rebuilt to hold three tiers of berths, and the New York Central and the Pennsylvania have purchased some 100 lounge and parlor cars, formerly operated by Pullman on their through trains, and have remodeled them into day coaches.

To handle an entire army division of 15,000 men with all of its equipment requires nearly 1300 cars, of which 338 are used for passengers and about 900 for freight (nine box cars and 895 flats, to say nothing of 82 baggage cars, used as kitchen cars in the troop trains). . . . As many as 300,000 men and their ammunition and their arms may be handled in a single troop movement, which easily may reach across the North

American continent. There is little or no delay in the movement. It is swiftness personified. The railroaders themselves, long since trained to a military discipline, seem to take it as but part of their day's work.

WAR freight upon the roads presents a fresh set of problems.

Built for a movement that for nearly half a century has been primarily eastbound, the transcontinental roads of the United States now face a traffic that chiefly is westbound. The West Coast has gone into war production on a huge scale. California begins to rival the Northeast in its manufactures. It specializes in the manufacture of airplanes and of ships. Both planes and ships are assembled from a vast number of parts and gadgets, gathered in from hundreds of submanufacturers all over the land. The movement of these prefabricated materials across the broad continent is no small matter.

Nor is the task of moving raw materials — almost all of them moved on the rails—a small matter. Steel is the primary integrant of most war supplies, be they guns, trucks, jeeps or locomotives—and last year more than 100 million tons of ore came by rail and by the mammoth fleet upon the Great Lakes to the blast furnaces of the United States. . . . This year, due to a very hard Winter and late Spring, it is coming more slowly. . . . Coal, in great quantities, also must get to the steel mills. Here is still another task for the railroad. . . . Coal must also go toward many other industries, essential and nonessential, but all highly important to the retention of American life at its highest efficiency. Here is another task for the railroad. . . . Food is still another. . . . A new load was placed upon our Eastern railroads less than a year ago when, unexpectedly, they were called upon to bring oil—fuel oil and gasoline—in increasing quantities to the Northeastern portion of the land. Ordinarily, this heavily populated section was supplied by tankers coming up the edge of the Atlantic from Gulf of Mexico ports adjacent to the oil fields, but the submarines ended that mode of outland water transport, and thrust this new burden upon the inland railroad. . . . The railroad has met this problem magnificently. Despite a Winter of unusual severity, it has brought and still is bringing 900,000 barrels a day from the South and the Midwest up into the Northeast on an average run of over a thousand miles, and while the completion of new pipe lines from the Texas oil fields to the Central States and from the Ohio River to the East has eased the situation a bit, constantly increasing military needs are increasing the rails' overload.

To handle these flood loads and handle them well, and still send about a quarter of a million of its workers into the armed services, has been no small task for the American railroad. It has faced more than once the swift deterioration of its equipment—cars and locomotives and tracks working under unusual wartime strain have a tendency, like the old one-hoss shay, to go to pieces. It has not always been easy to get men and materials to maintain the shops and other essential mechanical facilities. But somehow our national railroad system has managed to do all of this. . . . Delays in freight transport have become almost as inevitable as discomforts to travelers—but they are not great, and America is bearing them and grinning as she does so. It is all in a day's work. Our rail transport is bearing its own parts of the burden, fighting its own battles in this man's war. And it is not losing them.

Edward Hungerford

Troops entraining at Fort Dix, N. J.

Harold M. Lambert. Copyright.

This one serves in Persia.

War Engines

★ American-built locomotives, designed to save essential materials, haul wartime traffic overseas.

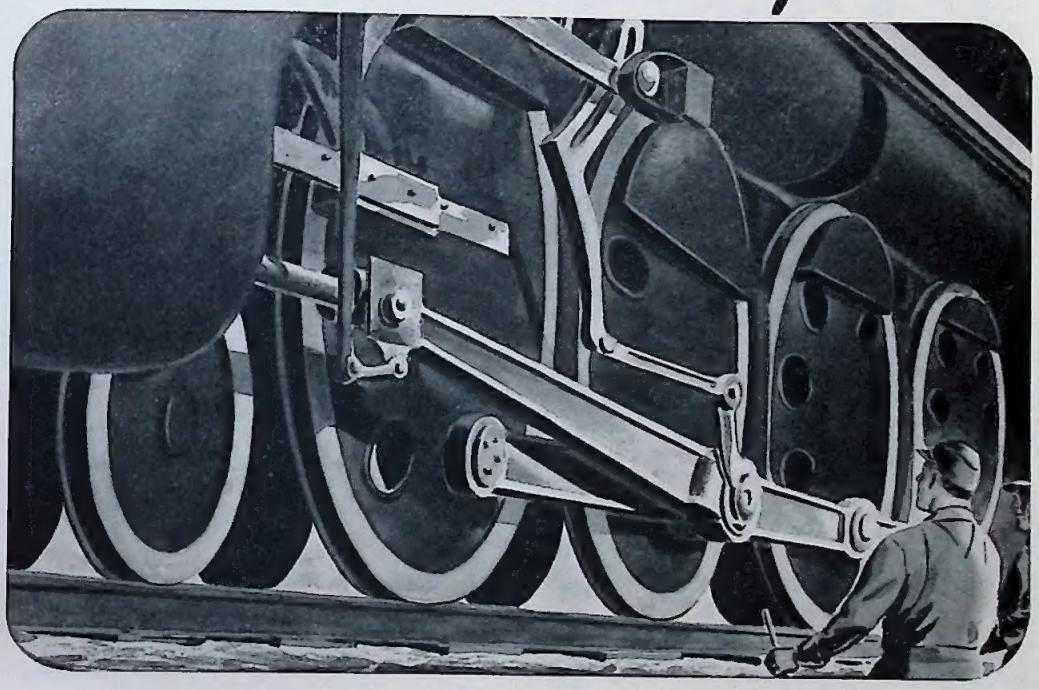
Over the tortuous curves and grades of the railroad from the Persian Gulf northward into Russia, American locomotives like the Mikado above are pulling valuable war materials under unusually stiff operating conditions. This railroad was finished in 1938 with no idea that it would later become such an important item in Allied logistics. It is single track, with many tunnels and bridges and no automatic signals.

Another type of locomotive doing war service in foreign lands is the Consolidation shown below. The British call these American-built locomotives "Austerity" engines because they are stripped of all gadgets. True, they are designd to save essential materials, and many an efficiency auxiliary is missing, but for wartime traffic they produce the ton-miles. Several hundred of them are in service in the British Isles. Railroad transportation is such an important element in war that Allied fliers have been concentrating on knocking out German locomotives by exploding their boilers with machine-gun fire or by bombing, while at the same time Allied locomotive manufacturers are building up the locomotive power of the Allied forces in all theaters of operations.

Specifications of these locomotives remain, for the time being, a military secret. Both were built by Lima.

This one serves the British Isles.

MAKING *History*



History is being made in the theaters of war all over the globe. History also is being made behind the mighty drive wheels of locomotives. The greatest loads of raw materials and finished products ever transported are being moved the length and breadth of our land. Frisco Faster Freight is serving as a vital transcontinental link from border to border, coast to coast. In the war of movement at home...Frisco is doing its part. It's a great task for a great railroad.

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Railroad Magazine said, " . . . large enough and clear enough to show not only all lines now operating in the Keystone State but also abandoned pikes and even important roads projected but never built. . . . This is the most complete railroad map of Pennsylvania ever published. . . . You can follow any particular railroad through a crowded area such as the maze of track around Pittsburgh." Order this 17" x 22" three-color lithographed map, Railroads of Pennsylvania, now. Postpaid, 50 cents.

Just before this issue closed we sneaked a look at an advance copy of Ed Hungerford's new book, *Transport for War*, which we will have in stock by the time you read this. A 268-page review of the part transport is playing in winning the war, it will prove immensely intriguing current reading and a valuable document to look back at after Victory. We can furnish it for $3 postpaid.

Three of Edward Hungerford's recent books have proved immensely popular. These are *Men and Iron*, the story of the New York Central ($2.50); *Daniel Willard Rides the Line*, the life story of the late Daniel Willard of B&O fame ($3.50); and *Locomotives on Parade*, the fascinating story of American locomotives ($2.50). We have all three of these books for immediate shipment.

Your small children (3 to 6 years old) will delight in Playtrains, colorful and exact cars and locomotives printed in exact detail on small rectangles of heavy cardboard so they can be made up into domino-like freight or passenger trains of any consist. Set contains 4 locomotives, 9 passenger-train cars, 17 freight-train cars. First set, in box, 25 cents; additional sets in same box, 3 for 25 cents, postpaid.

If you aren't putting at least 10 per cent of your earnings into War Bonds, that's the best investment you can make. Books are the second best.

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Correspondence

Trains for May shows, at the top of page 33, a picture over the caption "Where? When? How?" This same picture is shown in Nevada histories as at Mill City [a station on the Central Pacific (now SP) southwest of Winnemuca.—*Ed.*]

Milo Taber, Room 2, Farrington Bldg., Elko, Nev.

. . . It is a mixed train with four or more emigrant cars attached to the rear, cars in which early-day settlers traveled to the Western states at very low fares.

Erle Heath, Editor, *Southern Pacific Bulletin.*

The photo at the bottom of page 33 of your May issue was taken at Belview, Minn., and is of an M&StL train. The man second from right (with mail pouch) is John Evans, a great-uncle of mine, who was agent there for many years.

Navarro Fosse, Box 72, Decorah, Ia.

. . . It is train No. 14, eastbound. No. 31, a 4-4-0, was built by Baldwin in 1880, and later renumbered 116 (perhaps about 1907 to 1910). It was scrapped in 1921.

M. C. Wallace, 3121 Harriet Ave., Minneapolis, Minn.

On page 45 of your May issue you state that CM&StP No. 830 "was sold to the Plant System (now Florida East Coast). What became of it after that is not known." No. 830 was one of three "triplets" which the Atlantic Coast Line, *not* FEC, inherited from the Plant System: Nos. 104, 105, 106, built for the CM&StP in 1893 (Nos. 828, 829, 830). They were renumbered ACL 287, 288, 289, and later were renumbered 1287, 1288, 1289. They were changed to Ten-Wheelers in 1912. Nos. 1287 and 1288 were scrapped in 1934, No. 1289 in 1935.

Dillwyn Parrish, Box 2133, Greenville, S. C.

Washington Terminal is a tribute indeed to democratic ideals. It stands as an example of what cooperation among the railroads of America can accomplish. A fitting setting for a democratic ideal—beneath the shadows of Capitol Hill and the Washington Monument, the shrines of Democracy.

Charles E. Sweeney Jr., 1610-A S. 56th St., Philadelphia, Pa.

I wish to help Herbert Gaarder Jr., whose letter was published in the March issue of *Trains*. The D&RGW "sports model" is the narrow-gauge K-28 series, Nos. 470-479. The "mudhens" are the 450 series, and are so called because of the angle at which the cylinders are set, causing the engines to rock from side to side when working hard.

J. P. Burtner, 1616-A Virginia St., Berkeley, Calif.

I am disappointed because there was no mention of Colorado City in your Colorado Midland article. From an operating standpoint Colorado City was the most important town on the CM. Colorado Springs was no doubt the largest town, but it was nothing but the starting-place of CM trains and the junction with the connecting railroads. All freights started from Colorado City [which is now a part of Colorado Springs.—*Ed.*]

Hazen A. Stanley, 582 21st St., Oakland, Calif.

. . . It was a curious road and often curiously run. An old Colorado stockgrower rather wittingly summarized it when he said: "It doesn't start anywhere (Colorado Springs), runs over the peaks of the mountains, and arrives nowhere (Glenwood Springs), and then has to back in on a wye."

Peter D. Vroom, Assistant Editor, *The Pullman News.*

. . . I have a 1903 issue of the *Official Guide* which shows the schedule of the CM. No. 9, operating between Denver and Cripple Creek, was called "11 Come 7." Can anyone tell why this train was given this odd name?

E. M. Neff, 1101 Piedmont Rd., Columbus, O.

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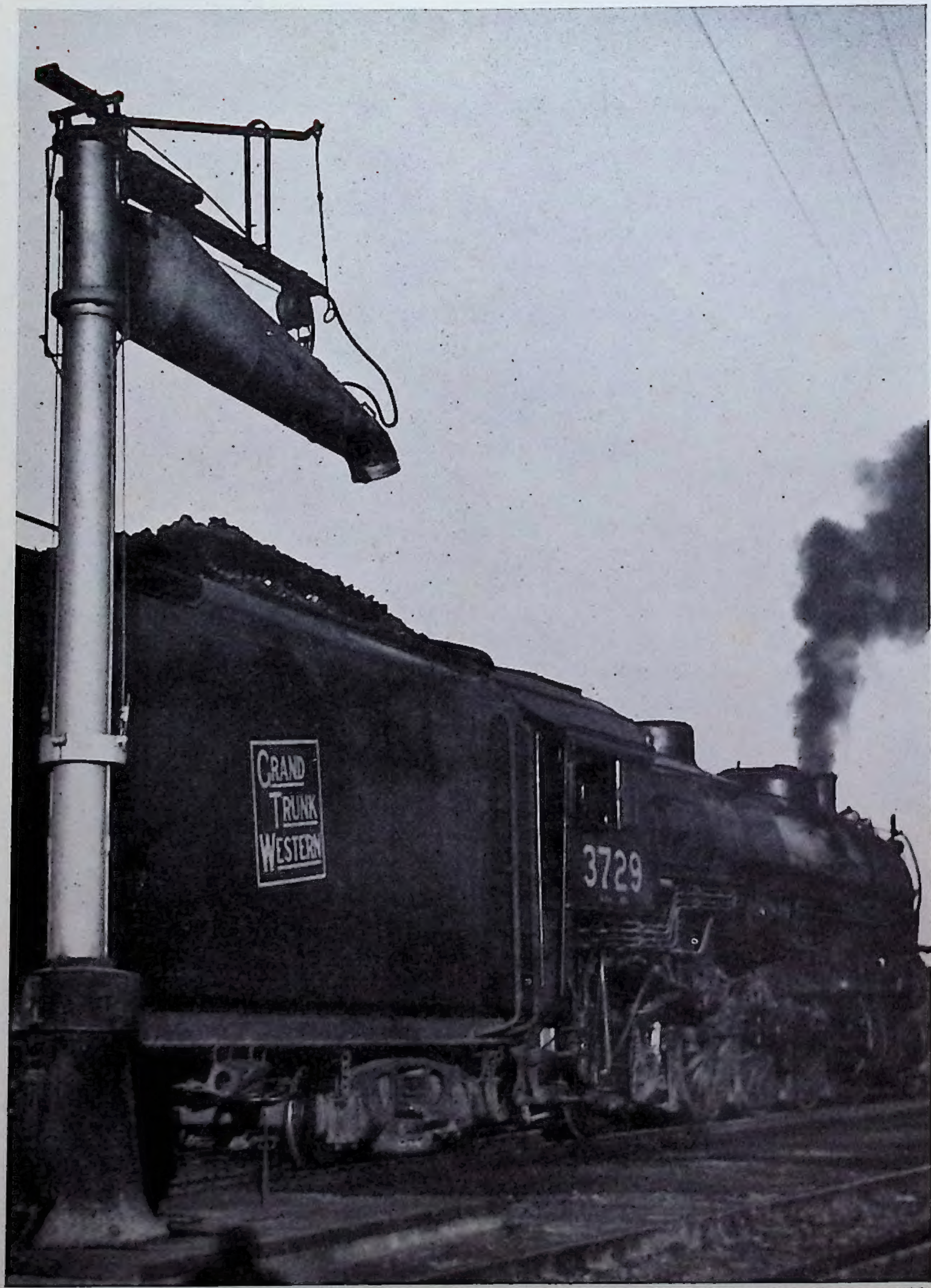
Trains



Barney J. Vedders, 704 Catherine Ave., Muskegon, Mich.